TECHNOLOGY DEPT.

MARCH
1942

Industrial FINISHING

Published Monthly in the Interest of Modern Production Finishing

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Late generations in America who have taken our liberty, peace and tranquility for granted have had a rude awakening. We awaken to find that our very existence is now being threatened, perhaps more seriously threatened than at any time in our history. But with this awakening there also comes a discovery—a re-discovery—of our vast resources, riches, manpower, productive capacity, etc., which, if properly co-ordinated with our initiative, courage and mechanical skill, should enable us to repel all enemies. To this end The Lilly Varnish Company offers all the resources and facilities of its various plants, along with the unified determination of our entire organization. Come on America—let's get going.

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that make the most of available raw materials to give you greatest durability, together with attractive appearance and economy.

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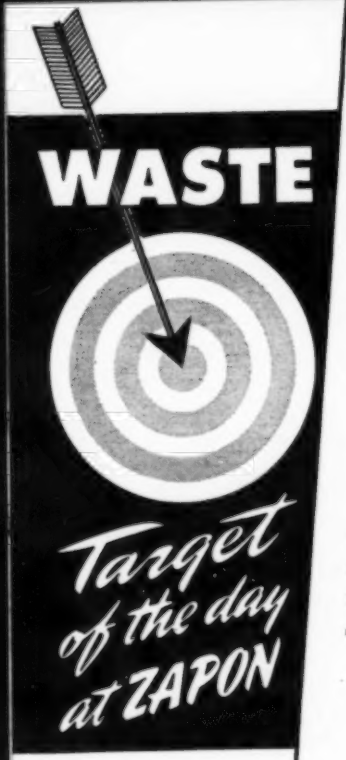

NOTICE

The supply of many of our essential raw materials has been definitely curtailed. A further reduction of the supply of these raw materials is to be expected over the coming months. Other raw materials and supplies, now available in quantity, will surely be added to the restricted list.

THIS MEANS THAT THE PRODUCTION OF THIS PLANT WILL BE DEPENDENT ON THE AMOUNT AND KIND OF RAW MATERIALS WHICH WE CAN OBTAIN RATHER THAN ON THE DEMAND FOR THE PRODUCTS WE MAKE.

It is therefore obvious that it is to the interest of every employee to do his utmost to avoid the waste of every kind of raw material we use.

You can cooperate by avoiding spoilage, producing the maximum possible percentage of first class goods, reporting leaks, eliminating spillage, and avoid waste by keeping the usage of ALL kinds of supplies and materials to a minimum.

M. J. Creighton
GENERAL MANAGER

THIS recent bulletin board notice put the whole matter so well that we thought the G.M. had written a mighty good advertisement. Shortages and reductions in materials face us, but conservation and elimination of waste will help to keep us all busy.

ZAPON

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Eastern Sales: Stamford, Conn. Western Sales: North Chicago, Ill.

INDUSTRIAL FINISHES

EIGHTEENTH YEAR OF PUBLICATION

Industrial FINISHING

Reg. U. S. Pat. Office

Published Monthly in the Interest of Modern Production Finishing

Vol. XVIII, No. 5 MARCH, 1942 $2.00 a Year

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Letters from Readers...

OF INDUSTRIAL FINISHING

These letters (and many others) were answered recently by the editorial department, but are published here to reveal certain interesting trends of desire and activity in the industry, and to encourage additional inquiries, comments and suggestions. Further information about any of them can be obtained by writing this office.—Editor.

Wood Finishes

On page 37 of your January issue you have an article in regard to Protective Penetrating Wood Sealer, Arm-R. We believe that we would have a use for this material on our drum shells and would appreciate your sending a workable sample for our experiments. Would also like to have a small sample of your Varnowax.—N. N. (Band Instruments).

Tumbling Barrels

I would like very much to find a source of supply for tumbling machines used in finishing processes. Will you please be so kind as to give me some information in this connection, preferably regarding manufacturers located in Chicago.—L. S. Co.

Four companies in Chicago are listed as manufacturing tumbling barrels, and we are sending you their names and addresses.—Ed.

Shellac Substitute

Owing to uncertainty of future shellac supplies, we are looking for substitutes to take the place of refined (wax free) shellac, which we have been using for a number of years in the manufacture of a non-buffing floor polish.

We believe there are certain water-soluble resins to be had which, when incorporated with hard waxes in a water emulsion, will produce a durable floor polish that will dry with a shine. There are also water-soluble gums which will meet the specifications, but these may not be hard enough.

We would much appreciate any assistance you can give us, in locating a few producers of such resins or shellac substitutes.—J. M. & S.

Supplies Wallboard Finish

We note, in your issue of last December, an inquiry made for wallboard and tile finishes. We are making an excellent material to be applied on wallboard and tile, especially on masonite, which is a great improvement over other processes as it is quick-drying and gives a gool tough finish. Please refer our letter to the company who made the inquiry.—Mimex Co., Inc.

Conveyorization OK

Your article, "Conveyors Streamline Production Layouts" (Feb., p. 99-100) hits the nail squarely on the head. Production layouts should all be hinged around material handling — at least material movement. Much can be accomplished by arranging equipment with an eye to straight-line material movement—no back tracking.

Conveyors are not always necessary. Most manufacturers when adding new equipment place it where space is available rather than where it should be fit into straight-line movement.

Apologies *in* Advance

WE CAN SEE it coming—the time when "normal business" will be seriously curtailed because of raw material shortages in our own lines. If you are doing Defense Work on which our materials are being used, please notify us at once and take steps to have your priorities extended to cover such items AT ONCE.

We urge all regular users to anticipate their normal first-quarter needs and give specific quantities and shipping dates IMMEDIATELY. All such orders will be filled in their relative proportion to the percent of materials we receive.

V. J. DOLAN & COMPANY, INC.

Mnfrs. of "Unquestionable Quality" Industrial Finishes

1830 N. LARAMIE AVE. CHICAGO, ILLINOIS

Do You

Air Dry or Force Dry?

Perfection Synthetic Flat Finishes will do both. Air dry overnight or force dry in 1½ hours at 140°.

FURNITURE FINISH — A LIQUOR PROOF WATERPROOF FINISH — PERFECTION PAINT & COLOR CO. INDIANAPOLIS

Panels coated with Perfection Flat Varnish can be immersed in water for 30 days without turning white or showing any other ill effects. Write us and we'll send panels and samples—and also a panel in water for 30-day immersion test.

PERFECTION FLAT FINISHES contain no stearates or other flattening agents. They are made 100% from gum, hence are as clear as gloss varnish — entirely free from milky appearance of conventional flat varnish.

Also, PERFECTION SEALER VARNISH covers 65% more surface than lacquer sealers —try them today.

PERFECTION PAINT & COLOR CO.

Indianapolis, Indiana

for Defense Finishing use

UNITED'S DEFENDER LINE

Defense products often require specially formulated protective coatings to meet the exacting conditions of wear, tear and abuse which they will receive in actual use. United's chemists have developed the DEFENDER LINE of protective coatings to meet the extraordinary specifications and requirements of defense products. If you have a production finishing problem on priority rated products you will find a quick solution among UNITED'S DEFENDER Line of protective coatings.

Send us your specifications and requirements—working samples and complete information will be sent promptly.

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1000 BAYONET SCABBARDS

per hour are painted by this Spraco Automatic Spray Finishing Machine. For painting shell and bomb casings—both inside and out—and finishing gun stocks, Spraco can supply the right equipment for *automatic* high-speed production.

Write us your requirements for quotations.

SPRAY ENGINEERING COMPANY
107 Central Street **Somerville, Mass.**

Equipment should be purchased not only to accomplish a given operation but primarily to ease the flow of production. Conveyor manufacturers are coming into their own. They should dictate the type of equipment used.

Your editorial "Real Production Experts Now in Demand" (p. 108) read with interest. Might have been titled "Doctors in Industry." Am waiting the reaction by you'r readers. The last half of your closing paragraph is well put—but the trouble is that manufacturers have something to sell and therefore can accomplish little along the line of personnel, methods, etc.

"Conveyorization is Being Extensively Adopted" (p. 109) is good also. You mention a letter from a Chicago agency seeking information on conveyors. Maybe I could serve them.

I am in the midst of converting a furniture manufacturer's plant to 100% defense work on metal products—in fact 100-lb bombs. Have until July to get into production.—Industrial Consultant.

Casket Finishing

Could you put us in touch with some one who could supply us with the material and equipment needed to produce polished wood finishes on redwood casket shells? We would like to produce grained walnut and mahogany finishes, and also silver and bronze metalized finishes.—S. Casket Co.

Toy Finishing

We would like to receive some information pertaining to the finishing of educational toys, if you have some available. We are particularly interested in a surfacer that can be used for tumbling and also some vegetable-base paints.—E. D. I.

"Plated" Finishes Look Like Electro-Plating

In the January issue of INDUSTRIAL FINISHING, we notice an inquiry on page 7, stating that someone wishes information on sprayed finishes that take the place of plated finishes.

We have a modern paint room which was converted to finish automobile hardware after the order came out stopping plated finishes.

We have produced thousands of various finishes which, in our opinion, replace plated finishes quite satisfactorily.

In a mailing bag we are sending you two pieces which represent a good substitute. One has clear syn-

1-9-4-?

Some year the war will end.

Swords will be beaten into plowshares, and golf clubs and refrigerators.

There will be a swing back into the things we buy because we like them and not because they are a grim necessity.

You are planning these things now, or should be. Let us plan with you toward the finish for 194?, whenever it is.

We welcome any call for cooperation on long-range planning for the finish of the future.

Meantime, for 1942 and as far as we can see, we shall do our utmost to supply our customers with the best available materials and service permitted by wartime conditions.

The Varnish Products Company

5208 HARVARD AVENUE

CLEVELAND, OHIO

THERE IS

NO SHORTAGE

OF

FLOCKS

and No Advance in Prices

Profitable Use of . . .

COTTON—WOOL—RAYON

FLOCKS

is being made by the smart industrial finishing departments everywhere. A spray coating of Flocks lends charm, attraction and utility to otherwise drab items—increasing both sales and profits.

Have you tried it? . . .

Write for free color card and samples.

CLAREMONT WASTE MFG. CO.

CLAREMONT, N. H.

The country's leading makers of Cotton, Wool and Rayon Flocks

thetic enamel (two coats) over buffed zinc die casting. This, you will notice, to the average person, would appear like a plated part. The other one is to represent "gold" and has two coats of synthetic enamel.

We would appreciate contacting the company that desires information, therefore will you please reply as soon as possible?—J. R. Co. (Ornamental Hardware and Accessories).

Information supplied. Incidentally the finished samples arrived and they look perfect, having a smooth, rich, lustrous, solid metallic color.—ED.

Mahogany on Gum

We are interested in obtaining an imitation-grain, colonial-red, mahogany finish on gumwood, and would thank you to advise us whether or not you are in the possession of any process by which we could obtain the desired results.—U. F. Co. (Bedroom Furniture).

This company has been supplied with information and names of firms that can furnish what is needed.—ED.

"Insulmat" Again

Will you please ask the manufacturer of "Insulmat" to send us prices on their pipe coating and a small sample of the material.—K. G. Co. (The House of Mirrors).

Write J. W. Mortell Co., Kankakee, Ill.—ED.

Portable Still to Recover Solvents

We would appreciate it very much if you would refer this letter to the Phillips Mfg. Co., so that we may receive information regarding the portable still which will recover solvents, as advertised in the February issue of INDUSTRIAL FINISHING. Your prompt attention to this request will be very much appreciated, as we are very desirous of receiving full details of this still.—C. N. Co. (Lamps and Stoves).

Wire Cloth Stenciling

We were checking through some of the old issues of INDUSTRIAL FINISHING Magazine, and we have found an article in the March, 1941 issue, written by Harry L. Hiett on stencil screen printing. We are particularly interested in the merits of wire cloth

(Continued on page 72)

INDUSTRY
ANSWERS
THE CALL
PAINTS
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★ PAINTS
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★ STAINS
★ ENAMELS
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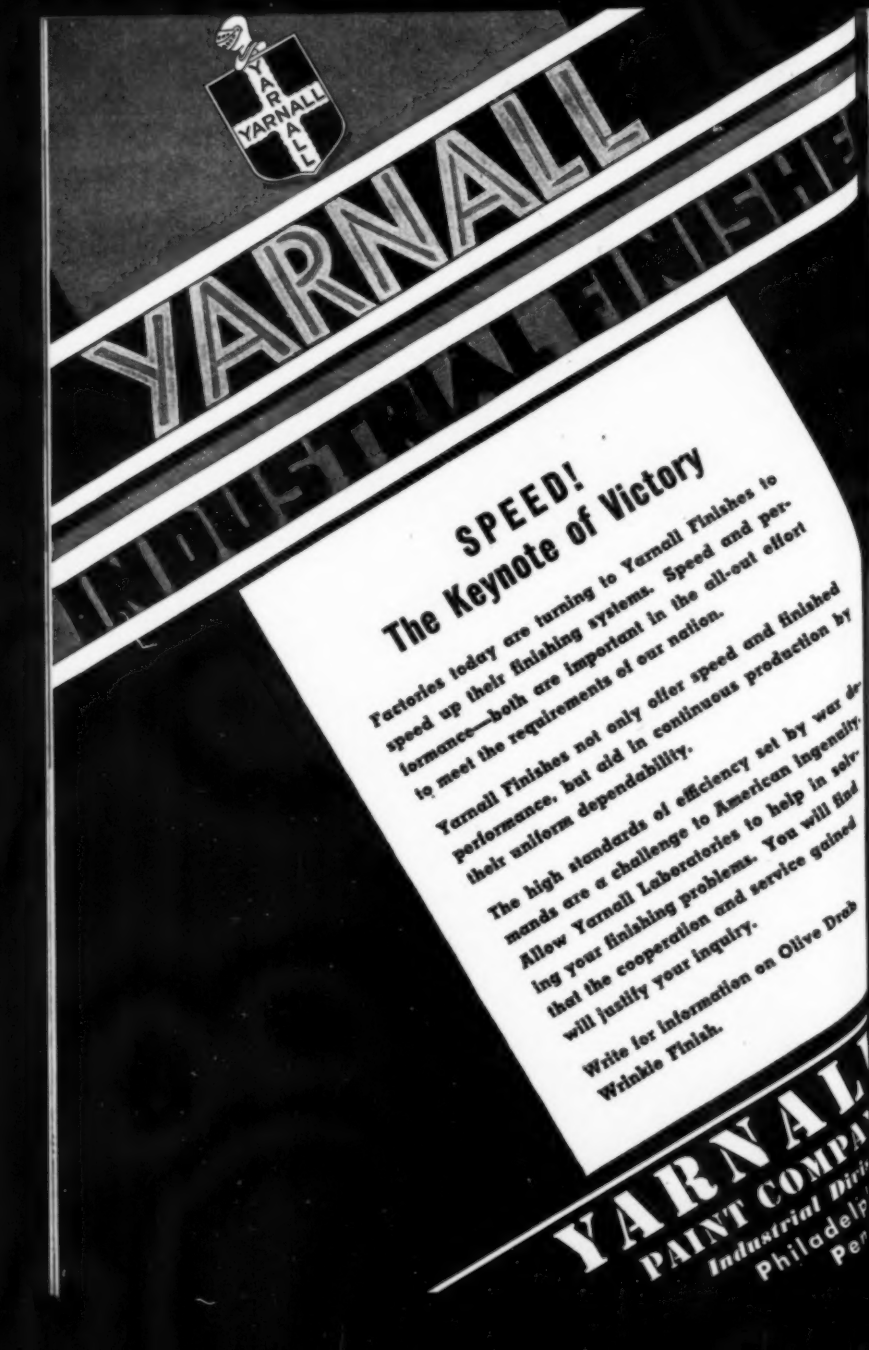
YARNALL
INDUSTRIAL FINISHE
SPEED!
The Keynote of Victory
Factories today are turning to Yarnall Finishes to speed up their finishing systems. Speed and performance—both are important in the all-out effort to meet the requirements of our nation.
Yarnall Finishes not only offer speed and finished performance, but aid in continuous production by their uniform dependability.
The high standards of efficiency set by war demands are a challenge to American ingenuity. Allow Yarnall Laboratories to help in solving your finishing problems. You will find that the cooperation and service gained will justify your inquiry.
Write for information on Olive Drab Wrinkle Finish.
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For ENAMEL STRIPPERS

The Buy-Word Is

"Enthone"

For the past 4 years Enthone strippers have been used by hundreds of manufacturers for quickly removing organic finishes from civilian goods . . .

And NOW—fast working, patented* Enthone strippers are helping to speed the flow of war goods.

Here's what Enthone strippers do:

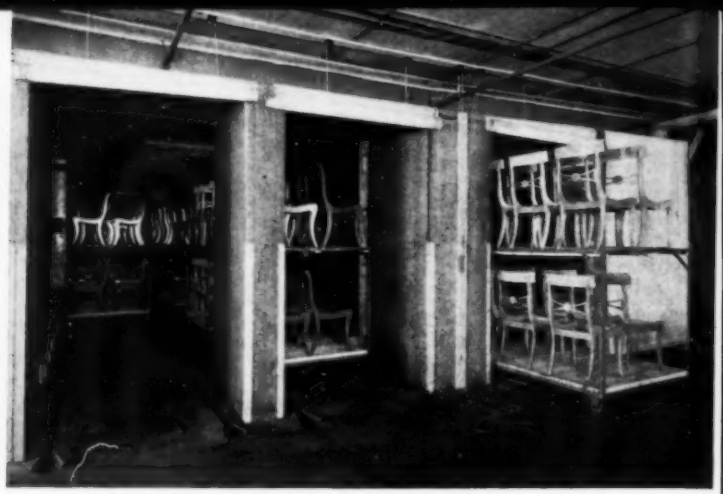
- ★ **Strip synthetics, japans, lacquers rapidly.**
- ★ **Leave all metals clean and bright.**

SPECIAL STRIPPERS for SPECIAL PROBLEMS —
TELL US *YOUR* PROBLEM!

THE *Enthone* CO.

NEW HAVEN, CONN.

*Protected by U. S. Patent No. 2242106



Finish Drying Rooms in

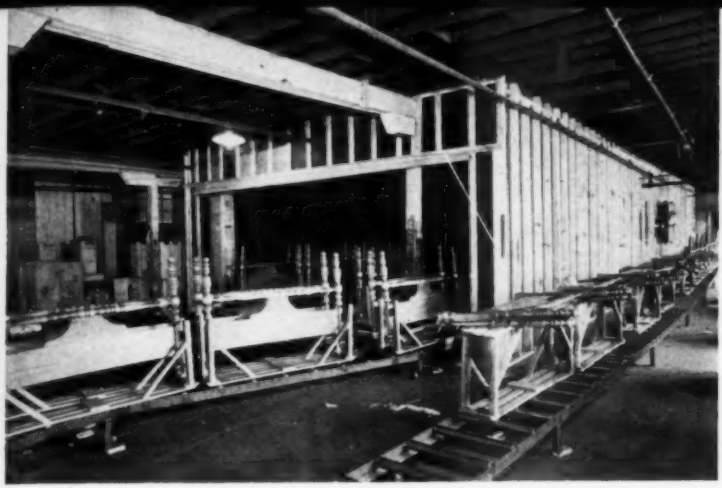
BY ROLLIN H. WAMPLER

IN THE LAST few years many furniture manufacturers have installed drying rooms, or "hot-boxes" as they are called in the trade, for quickly drying the materials used in finishing operations. Used in conjunction with conveyors, where indeed they are essential, they effect great economies by greatly reducing drying times.

When properly installed and operated, these drying rooms or hot-boxes do a better job of drying than the older air-drying methods. The result, in terms of the filler, is less swelling of the filler by solvents in the sealer used over it, as well as reduced shrinkage upon aging. When applied to topcoats, hot-box drying reduces shrinkage and makes possible much better results in the rubbing operation, with less likelihood of printing troubles.

Ideally, a conveyorized finishing operation requires hot-boxes for drying the stain, the wash coat, the filler, the sealer, the glaze if used, and the finishing coat or coats. In actual practice little more than a current of warm air is required for drying a non-grain-raising stain, a wash coat, or a lacquer sealer. On some conveyors, hotboxes are not even provided for these operations. However, they are absolutely essential for proper drying the fillers and final coats.

In this connection it should be pointed out that there is a great advantage in some force-drying of the sealer coat. The less solvent retained by the sealer coat when it reaches the sanders, the better



in the Furniture Industry

Photographs, courtesy of George Koch Sons, Inc.

it sands. This results in savings in sandpaper, which is no small item. There is less "striking in" of the final coat, which means better flow. In addition, the finishing-materials manufacturer can reduce the amount of stearate in the sealer, with great improvements in toughness and adhesion. Finishers should always remember that a quick, easy-sanding sealer makes for brittleness and lack of adhesion in the completed film.

What Happens—to Make Finish Coatings Dry

Drying of finishing materials proceeds by three fairly well-defined mechanisms. The first is by removal of solvents, which is by far the major factor in aniline-type stains, lacquer sealers, and clear or pigmented lacquers. After solvent removal, little or no further drying can occur except by some absorption of permanently liquid constituents by the wood.

The second mechanism is oxidation, which is closely tied in with the third type, or polymerization. After evaporation of solvents from pigment stains, fillers, glazes, varnishes, and some synthetic finishes, oxygen is absorbed by the materials. This process further hardens and toughens the film. Oxidation decreases the solubility of the material. This means that a well-hardened filler will not absorb solvents from the sealer as readily as a wet one, resulting in less swelling.

The third mechanism of drying may loosely be called polymeriza-

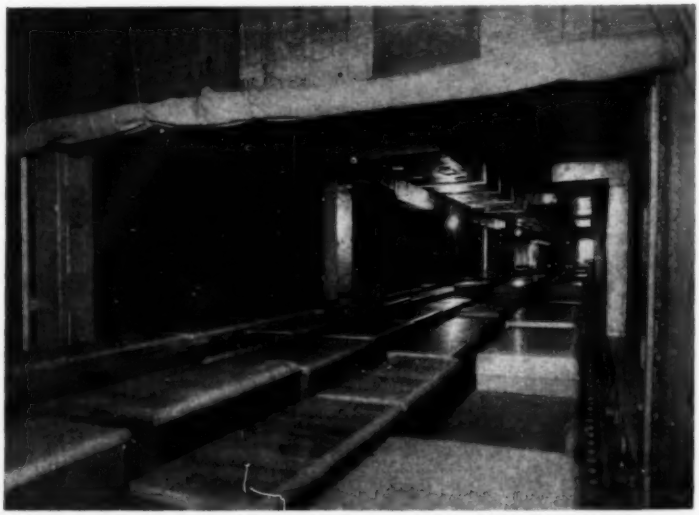
tion or "curing." This process is closely related to oxidation which, in itself, involves some polymerization. Polymerization may be roughly defined for the purposes of this article as a chemical change in which the molecular weight increases due primarily to the influence of heat. Thus, kettled or heat-bodied oils are oils in which polymerization has been induced by means of heat, with a consequent increase in viscosity and specific gravity and a decrease in volume.

In fillers a little polymerization undoubtedly occurs if the drying operation is carried far enough. The result is that the binder is less likely to be absorbed by the wood upon aging, which means there is less shrinkage. In varnishes made with some types of resins it is only the oil that polymerizes. In varnishes made with certain synthetic resins (not all, however) the resin portion as well as the oil may polymerize somewhat during the normal drying period, with further polymerization upon aging. Drying-type alkyd materials may behave in a somewhat similar manner.

How Dry Before Rubbing

The ideal furniture finish should have lost all of its solvents and be oxidized and polymerized to a point closely approaching the theoretical end-point before the film is rubbed and packed. Eventually it will approach this point anyway, and if not properly formulated it will become brittle.

In some respects the new urea-type furniture finishes most closely approach this ideal. Drying in the first stages is by solvent re-



Cedar chests going through drying room. Photo, courtesy of George Koch Sons, Inc.

moval. There is some oxidation during and after the curing process. But the greater portion occurs by a polymerization of the urea resin, induced by catalysts. These catalysts are affective at very low temperatures so that at 140° or 150° F., a great portion of the resin goes over to the insoluble, infusible stage in a short time. Furniture finished with this material is literally sheathed in a transparent sheet of a clear plastic material. Incidentally, the curing is not entirely polymerization, but for purposes of this article it may be considered so.

Why Force-Drying Is Desirable on Furniture Finishes

It is desirable to have a minimum of oxidation and a maximum of polymerization in a furniture finish. Increasing the polymerization usually decreases the oxidation. Air drying of oxidizing materials proceeds by solvent removal and oxidation with little polymerization. Force-drying introduces more polymerization, which restricts the capacity for oxidation and means a tougher, more permanently flexible film. This is the reason why a baked-on finish is usually tougher and has a longer life than the same film air-dried.

The foregoing considerations show why force-drying not only speeds up the finishing operation and makes it more economical, but also improves the quality of the finish if properly done. "If properly done"—aye, that is the rub. Finishers have often found that hot-boxes constructed for their use do not deliver the heat, humidity, and air flow they intended to get. This is especially true when the conveyor runs through the hot-box and no effective air seals or baffles are provided.

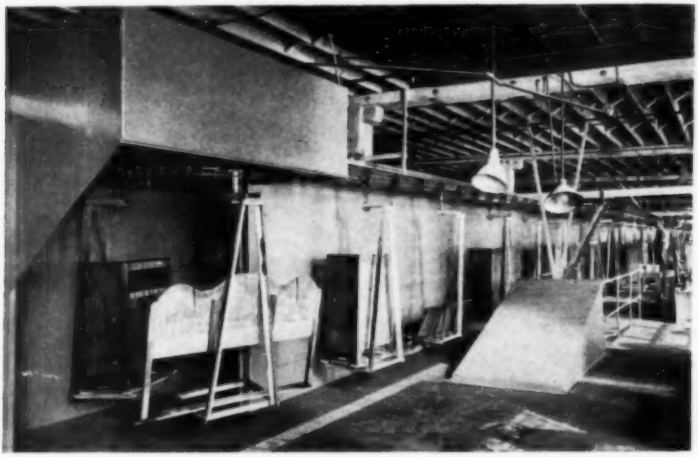
In one case it was found that the negative pressure created by the exhaust fans at the spray booths was drawing out much of the heated air from the top-coat hot-box which had its exit on another floor. Opening the windows in the finishing room did not completely solve the problem. It was finally solved by installation of a complete system for supplying clean, warm, filtered air to the finishing room.

In other cases hot-boxes have been installed during warm weather. When cold weather came along, heat losses made it impossible to maintain the desired conditions. Better insulation of steam lines and of portions of the hot-box has, in most cases, solved the problem.

Heat Isn't Enough; Get Air Flow and Humidity Too

But it takes more than heat to properly dry any finishing material. Air flow is important. When liquid solvents are vaporized their vapors occupy surprisingly large volumes. Further evaporation and access of oxygen are greatly retarded unless these vapors are removed. This is done by continually exhausting a portion of the air in the drying room and introducing fresh, heated air from outside. In the interests of economy this should not be overdone. The engineers who represent manufacturers of equipment for drying rooms can work out this problem in detail from considerations of the amount of furniture passing through the room per hour. *Stagnant, hot air will not properly dry any finishing material.*

A certain amount of humidity is desirable to prevent checking and warping of the wood construction, as well as to prevent flash evaporation of solvents from



Bedroom furniture on conveyor line leaving dry room. Photo, courtesy of Palmer-Bee Co.

the finishing material, the cause of casehardening. Proper heat, air flow, and humidity, then, are the three important factors in hot-box operation.

How Conveyorization Affects Drying of the Finish

On most conveyorized systems the conveyor carries the furniture right through the oven. When run at the normal speed for which the set-up was designed, with the hot-boxes operating correctly, good results are obtained. Now suppose that the conveyor is speeded up from a normal speed of say, 12-ft. per minute to 15-ft. per minute. Not only is total time in the oven reduced by one-fifth, but there is quite likely a drop in temperature and greater solvent concentration in the air in the oven. In addition, the same time is required to heat up the furniture to the air temperature. The net effect is a drop in the overall drying efficiency of the oven or drying room. Instead of getting 80%—the results you normally get—you now get perhaps 60 or 70%.

Some conveyors are arranged so that the furniture is removed from the line after it receives its final coat. Then it is placed in a large room for force-drying overnight. This method is also practiced at many places where there are no conveyors. Such a system has many points in its favor. Unless the other system is operated 24 hours per day the furniture must stand overnight anyway. This period might just as well be utilized for force-drying. Anyway, varnishes and synthetics and even lacquers are usually in better condition after an overnight dry of 110° to 125° F., with proper air changes, than after an hour or two at 150° F.

Furniture manufacturers who have overnight drying rooms will find that their systems are more

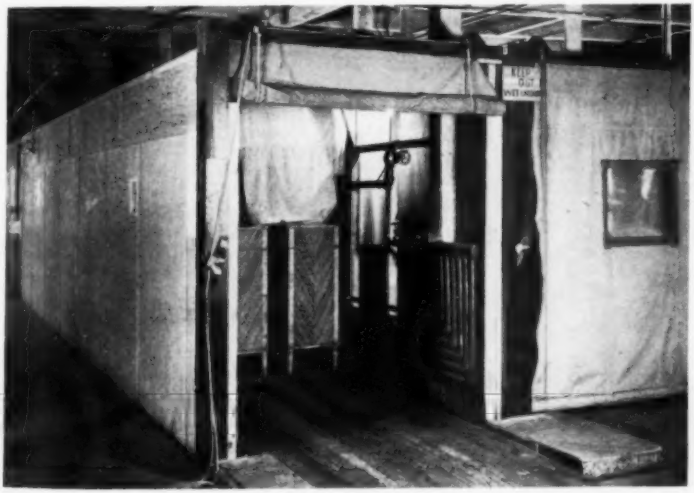
adaptable to changes to slower-drying finishes—as made necessary by wartime conditions. However, overnight air-drying of finishes at ordinary temperatures, after the furniture has passed through the oven is more satisfactory than simple air-drying alone

Overnight Drying Rooms; Circulation of Hot Air

Several things must be considered in the use of overnight drying rooms. One important thing is that you avoid putting the pieces too close together. You must have ample air circulation on all sides, as well as over the tops. At least 3 or 4-in. of space around all sides gives best results. An overnight drying room with steam coils but no provision for circulating the air and exhausting a portion of it, is very inefficient. Natural circulation will not ordinarily suffice. The solvent vapors, being heavier than even cold air, form a blanket over the furniture which retards further drying. You are better off to leave the furniture out in the open finishing room, at ordinary temperatures, than to shut it up tightly in an overnight drying room, even at elevated temperatures.

On a roller-type conveyor, where the furniture is pushed over rollers end to end with perhaps half a dozen parallel lines, it is easy to overload the drying room so that you do not get proper circulation, heat, and vapor removal. The capacity of an oven is determined, not by its physical size, but by the heat it can provide and the solvent vapors it can remove.

It is surprising in how few installations the conditions prevailing within the ovens are accurately known. Don't take anybody's word



A finish drying room without conveyors. Photograph, courtesy of Irwin Equipment Co.

for it; find out for yourself with the proper measuring instruments.

Check Actual Conditions in Ovens and Drying Rooms

The best check on temperature conditions is to run a recording thermometer equipped with a smoke-chart through on the conveyor at the level of the furniture. This will tell you exactly the conditions through which your furniture has passed—not just the conditions at one point.

A recording thermometer is essential for proper operation of overnight drying rooms. In all too many cases the steam pressure dies down during the night to an extent undreamed of by the finisher.

In ovens or drying rooms operated in connection with a conveyor, there should be at least two thermometers and humidity indicators with dials on the outside, so that conditions may be read at a glance several times during the day, without the necessity of entering the drying rooms.

Lacking this, wet and dry bulb thermometers should be placed at several places in the drying room and readings taken regularly. It is sometimes surprising how conditions within a drying room will vary from one point to another. Most well-designed ovens are arranged so that a uniform temperature and humidity prevails throughout, or they can be adjusted to produce this condition. Proper insulation of oven walls is essential for this, of course.

To summarize briefly, see that your ovens or drying rooms are properly constructed and adjusted —and then see, by actual test several times a day, that you have the conditions you need for proper drying, which is so very important.

Air Raid Shelter

A new type of air raid shelter that offers protection from the effects of gas and demolition bombs is being manufactured for the use of industrial workers as well as members of the armed forces. Tests by the War Department demonstrate that this type of structure is highly resistant to splinters, blasts, shrapnel, debris from falling buidings and earth shock.

In these severe tests huge demolition bombs were detonated statically anywhere from 10 to 30-ft. away from the shelter. When a 600-lb. bomb was exploded only 10-ft. away, damage was relatively light; and yet the resulting earth crater had a surface diameter of 35-ft., a bottom diameter of 13-ft. and a depth of 8-ft.

Engineers of the Armco Drainage Products Association, Middletown, Ohio, designed the shelter to provide protection from bombs falling not closer than 25-ft. It may be installed in the open, in a hillside or in connection with an office or factory. When the shelter is to be used with a building it is so placed that people may enter from their work.

Whatever the conditions may be at least 3-ft. of earth should cover the shelter. Earth shock tends to lift rather than crush the shelter when it is installed with its mid-diameter slightly above the natural ground level.

The Armco shelter is intended for 50 persons, the largest number recommended by the Office of Civilian Defense. The structure is 50-ft. long and 7½-ft. high, but may be extended or shortened. Design is flexible and the standard metal sections come in multiple lengths of 2½-ft. Each foot of structural length provides seating space for one person.

The same type of curved and corrugated steel sections that form the main portion of the sturdy shelter have been used successfully for bridges and other large drainage structures. The shelter design shows the foresight of modern industry in adapting its products to war-time needs even though the use of steel for civilian shelters may be restricted.

Occupants may leave through the 30-in. escape tunnel if debris blocks the entranceway. A canopy shields the door from falling debris while explosion walls shield the entrance from a frontal blast. Explosion walls or barricade may be installed parallel to the entrance walls so that shelter users may enter from two sides. These barricades also may be placed in such a way that there is one entrance at the front and another at the rear. Tests have shown that side blasts tend to pass through the entrance walkways with relatively light pressure.

Cleaning Steel Shells

BY G. RUSSELL HERSAM
Oakite Research Laboratories
Oakite Products, Inc.

AS EVERY producer of ordnance shells knows, cleaning operations play an important part and they require the same care and attention that are given other shell-manufacturing operations. Without adequate provision for cleaning, munitions production can be seriously crippled, regardless of how modern or how streamlined all other sections of the production line may be. It must be recognized, therefore, that cleaning can be—but most assuredly does not have to be—a bottleneck of far-reaching consequences.

In any cleaning problem considerable influence is exerted by those operations that precede the actual cleaning itself; so it is with munitions cleaning. In this discussion I will give due consideration to those operations that come earlier in the production line and which affect cleaning. Frequently these operations are the hidden source of cleaning troubles and, when so recognized, steps can be taken to alleviate the cleaning difficulty.

For reasons of space the treatment of munitions cleaning in this article will be confined solely to the steel shell or projectile. Cleaning methods here presented are, for the most part, those being successfully utilized for shells of 75-mm to 155-mm in size, including high explosives, anti-aircraft and howitzer types of ammunition. It should be recognized, however, that in principle the described methods are wholly applicable to shells of smaller sizes.

Although improved shell manufacturing methods have necessitated improved cleaning technique, they have, on the other hand, considerably simplified the shell-cleaning problem in some respects. The most prominent example of this is the modern trend toward furnishing steel shell forgings with their cavities finish-forged—or in other words, with the shell interiors forged to conform with the finally required interior shell dimensions. This practice eliminates the boring operations formerly required, thus doing away with the troublesome problem of removing imbedded chips and heavy machining oils from the innermost parts of shell cavities.

Lubricants That Affect Cleaning Operations

In the production of a steel shell, one of the first operations that affects subsequent cleaning is the nosing operation. This bit of work, as its name implies, consists of nosing-in the open end of the shell. In some cases this is accomplished by means of a hot-forming

operation, but the modern tendency is to form the shell nose cold in a crank press. This latter method has the advantage of eliminating the heating and subsequent scale removal problem which is involved where the hot-forming method is employed.

In either case, some form of lubricant is required to protect the dies and to produce proper results. It is here that the cleaning problem may be made either very difficult or comparatively simple. In addition to the usual considerations, lubricants should be selected with an eye toward their quick removal later by inexpensive simple cleaning methods.

In this connection it has been found that a special drawing compound not only provides for properly balanced lubrication and excellent die life but possesses, as well, those properties enabling it to be quickly and thoroughly removed. This product is used with a good grade of mineral oil, and frequently it is found desirable to add graphite to the mixture. Graphite-bearing lubricants are often used for this work and, unless the lubricant base is of a type that responds quickly to the action of cleaning solutions, graphite removal will be difficult. The use of the special drawing compound obviates this possible difficulty.

Salt Deposits; Graphite; Oil

Where shells are nosed by hot forming and the shell is heated to proper forming temperature in a salt bath, the problem of removing salt deposits, as well as graphite and oil, can be troublesome. In such cases a quick mildly alkaline immersion or spray wash, just as soon as the shell has cooled to a reasonably low temperature, will serve to almost completely remove these accumulations and thus considerably lighten the load on the final cleaning operation.

As is the case in selecting a lubricant for the nosing-in operation, it is also important that the machining lubricants employed in the various shell machining operations be chosen carefully. The selection of easily removable cutting fluids contributes much toward guaranteeing freedom from subsequent cleaning difficulties. Although the more severe machining operations require a straight cutting oil, most operations performed on shells find soluble oil emulsions preferable.

A suitable soluble oil provides exceptional results in rough and finish turning, facing, milling and in other operations carried out on multi-tool lathes and multi-spindle automatic machines. It is customarily employed at ratios of one part soluble oil to 10 or 15 parts of water. This product's high lubricating and cooling characteristics provide for accurate work on fine finish. Good tool life is experienced. The stability of its emulsions and its high resistance to rancidity make it economical to use.

Cleaning Just Before Inspection and Painting

Cleaning before inspection and painting is the most important cleaning operation in shell manufacture. Other cleaning operations, however, are often desirable as, for example, cleaning the band-seat to remove chips, oil, etc., prior to pressing in the copper band; this is readily accomplished by a simple immersion or spray cleaning. However, it is the final cleaning prior to painting that requires most rigid control and attention.

Final cleaning has two impor-

tant functions. First, it provides for expediency and accuracy in inspection. Secondly, if properly done, it produces shell surfaces that can be spray painted both inside and outside without the possibility of immediate or later difficulties due to poorly adherent paint films.

The Mechanical Washing Machine for Straight-Line Production

Of the shell cleaning methods available, mechanical washing machine methods, without doubt, are best adapted to meet the requirements of modern straight-line shell production. Metal washing machine manufacturers are thoroughly experienced in designing equipment to meet shell cleaning problems and are fully equipped to make use of all modern developments. In general, the requisites of such equipment are that provisions be made for:

1) Thorough and complete contact by the cleaning solution with all interior and exterior shell surfaces;

2) An adequate period of contact between shell and cleaning solution;

3) Adequate solution pressure;

4) Adequate heating facilities;

5) Good rinsing and drying facilities.

Cleaning materials for use in automatic washing equipment must be carefully selected. They must have sufficient wetting, penetrating and dispersing qualities to quickly and effectively remove all existing deposits. The nature of the material must be such that its solutions do not produce staining of the copper band. Solutions should be of a non-foaming type. Also, and perhaps most important of all, the cleaning solution must possess excellent free-rinsing properties so as to completely dispel all possibility of any traces of alkali remaining within the shell cavity after the rinsing operation.

Rust Protection Is Important

Washing machines for shell cleaning, as a rule, consist of three spray compartments. In the first compartment a properly selected alkaline cleaning material is used and the remaining two compartments are both used for rinsing purposes. A composition material having all the above-mentioned cleaning material qualifications, is finding wide use as a shell cleaning material in mechanical washing machines. Solution strengths range, on the average, between 1 and 1½-ozs. per gallon. Cleaning solution temperature is customarily maintained between 190° and 200° F.

Many shell manufacturers have been confronted with the problem of rust formation on steel shells when using mechanical washing equipment. This problem has been readily overcome in such cases by readjustment of both solution and rinse spray nozzles to secure the best possible spray operation, and through the use of special materials in the final rinse tank of the washing machines.

Cleaning Materials That Prevent Rust

Two materials are available for this purpose. Both find successful application, depending upon the exact plant conditions to be met. Most commonly used is "Compound No. 35" which, employed at the low concentration of 1% by volume, acts effectively to curtail rust formation. In addition, it mildly treats the shell surfaces in a way that insures exceptional paint adherence. Less frequently used but particularly suitable un-

der certain conditions is "Composition No. 6." This product is also used at a very low concentration.

Rinse tank temperature should be high in order to promote rapid drying of the shells after cleaning. In instances where spray painting operations follow shell cleaning almost immediately, it has been found necessary to operate the final rinse tank in which "Compound No. 35" or "Composition No. 6" is used within a relative low temperature range of 130° to 140° F.; otherwise the heat retained by the shell after high temperature rinsing tends to cause painting difficulties. In such cases some additional provision for drying is essential and air-blowing of the shell interior and exterior is a method commonly being employed.

Tank Methods of Cleaning

Where automatic washing equipment is not employed, tank cleaning methods may be used successfully. In considering cleaning materials for use in tank methods, the same fundamental factors as previously mentioned govern their selection. Several suitable materials give complete satisfaction in terms of both performance and economy. Equipment required is relatively simple and easily constructed. A heavily reinforced tank of welded steel or sheet iron construction is used for holding the cleaning solution. The tank is equipped with a closed steam coil of sufficient size to maintain the cleaning solution temperature at 212° F. An alternate method of heating is to use immersion gas burners.

A row of shells is clamped, open end up, in a specially constructed rack held by a U-shaped yoke which is suspended from an overhead hoist. The rack is then lowered into the cleaning solution until the shells are completely submerged. After sufficient time has elapsed to insure complete cleaning, the rack of shells is raised above cleaning solution and the entire unit is upended between pivots of the yoke, so that the solution in the shell cavities is completely emptied back into the tank. After draining for a short time in this position, the shells are transferred to another location where they are thoroughly spray rinsed both internally and externally. This rinsing operation is usually done with the shells in a vertical position, open end down.

Another tank method of cleaning shells makes use of a specially designed tank equipped with jets over which the shells are placed and through which a hot cleaning solution is sprayed at high pressure. A centrifugal pump provides force for spraying and recirculating the solution. While the shell cavities are being cleaned, shell exteriors are simultaneously being washed by means of cleaning solution discharged from showers above and around the shell and directed so as to contact all external surfaces. The shells are then transferred to an enclosure where they are spray rinsed.

Supplementary Cleaning Is Sometimes Required

Occasionally a situation is encountered where, due to a peculiarity in plant conditions, some kind of supplementary cleaning action is needed. In cases of this type, water-emulisifying solvents can be used in a soak operation immediately preceding normal cleaning, whether it be by washing machine or tank method. This solvent presoak, as it may well be called, is carried out at room temperature

and may or may not, as is desired, be followed by water rinsing. Obviously, provision for a hot water pressure spray rinse will act materially to reduce contamination of the regular alkaline cleaning solution and wherever this is practical it is recommended. At this point it may be well to mention that solvent cleaning alone (to be followed of course, by a thorough hot spray rinse) can in some instances leave the shells in a properly clean condition for painting.

(Reprinted from Oakite News Service)

Priorities and Pyrometers; Defense Bulletin No. 1

A clear, concise explanation of how the national defense program affects purchase, use and maintenance of temperature measuring and control instruments is given in Defense Bulletin No. 1, issued by Wheelco Instruments Co., Harrison & Peoria Sts., Chicago, Ill.

The bulletin, of six pages, has been issued to aid industrial instrument users in defense and non-defense industries to gain maximum life and efficiency from pyrometric equipment now installed and being installed. It will be suppemented by similar informational bulletins, if required.

Defense Bulletin No. 1 is designed to aid all users of pyrometers, regardless of make, to maintain equipment so it will operate efficiently and give uninterrupted service. It suggests substitute materials that may be employed in place of materials made critical because of the war program, and compares the properties of the original and substitute materials.

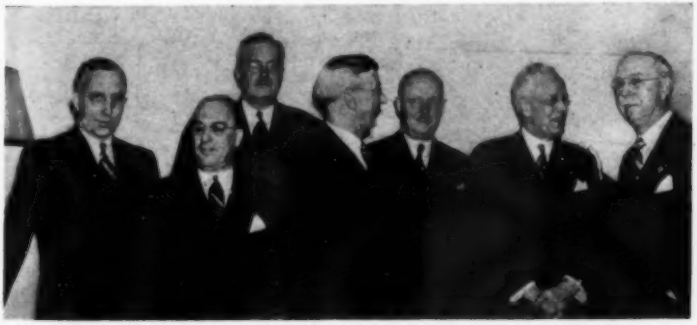
Copies may be had by addressing the company.

Glidden Co. Honors "Old-Timers"

Twenty-four "Old-Timers" of The Glidden Co's Cleveland organization, all of whom have been with the company a quarter of a century or more, were honored at a dinner in the Rose Room of the Hotel Cleveland on January 20. Their hosts were officers and department heads of the company, as well as regional directors and divisional managers gathered there for their annual convention.

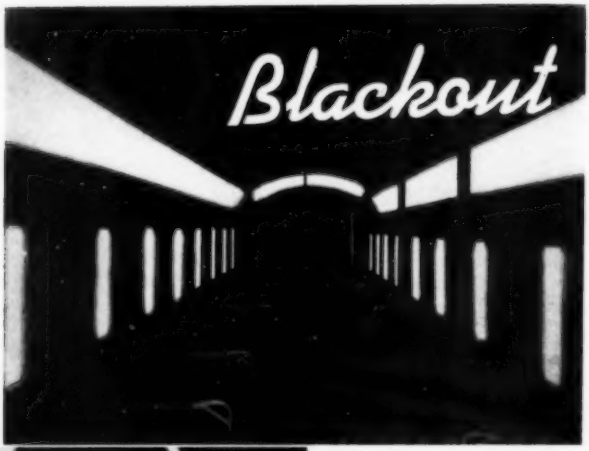
Each of the veterans was presented an engraved gold watch by President Adrian D. Joyce. Oldest of those present in service is Edwin A. Millard of the Trade Sales Division, who began 44 years ago helping his father as a Glidden salesman. Others who boast more than 40 years are Henry Hendricks, varnish chemist; Claude D. Prentice, who retired from the varnish department in 1940; and Frederick E. Lyman, industrial sales representative. Ten others have been Glidden employes over 30 years.

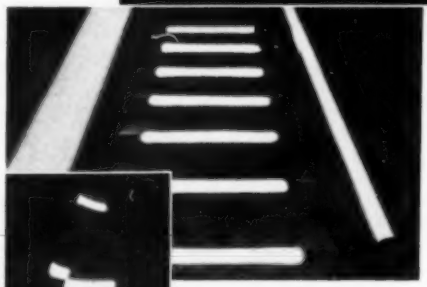
Employes of the Reading Division with service of 25 years or more were given similar awards at a dinner at an earlier date in Reading, Pa., and the same recognition is planned for the "Old-Timers" in all other divisions of the Glidden organization.



This photograph shows President Adrian D. Joyce (extreme right) congratulating some of the "Old-Timers" who are well known in industrial, railway and marine circles. From left to right they are Lloyd E. Dean, Norman E. Greene, Edward C. Shurtleff, Frederick E. Lyman, Edwin F. Rosenberg and Herbert M. Wells—all of The Glidden Co.

Blackout





BY W. J. MISKELLA
Infra Red of Cleveland

Photographs by courtesy of Continental Lithograph Corp.

These illustrations show only a few of the hundreds of possible applications of luminous paints for service during periods of blackout. The top illustration shows the treatment for the interior of a public passenger coach. The middle picture shows a stairway, with the edges of treads and handrails painted. The lower picture shows a man wearing clothing fitted with luminous bands.

A NEW blackout paint that glows in darkness has been developed. It takes on radiant energy from exposure to natural light during the day, or during exposure to fluorescent light any time. Indeed, it is uncanny to sit in a room in which the fluorescent lighting fixtures have been painted with this new material, or where it has been applied as a lining like oilcloth. When the lights are turned off and no electricity is present, you can see, move about and do almost anything you desire. This glow will continue for 36 hours, if necessary.

Industrial finishers have tried for years to find a real paint that would glow in the dark and not be

PAINTS THAT GLOW IN DARKNESS

subject to the hazards and drawbacks of the material used on watches, clock dials and the like. Phosphorous, which seemed to be the only material available, now turns out to be on the side lines in comparison to this new product. This new luminous paint is now on the market and available for a thousand war uses.

Not only is this timely need available, but it can be had in a variety of colors. It may be applied by spraying, brushing or dipping. Its covering capacity is only 50 to 60-sq.ft. per gallon, but under certain conditions this may be increased, depending upon the demand for luminescence and the product or surface it is to be used on or with. Also, it is customary to apply a clear varnish over the coating to protect it.

Finishers will be interested to know that the material must be applied under very clean conditions. Otherwise dirt specks and defects, not extremely objectionable in general finishing, are magnified and show up in the dark very boldly. That is where quick-drying processes play a major part. The quicker one can make the coating dry the less chance there is for these dirt specks to become serious. Naturally, infrared drying becomes desirable here, since it supplies a practical means of drying paint coatings very rapidly. With proper associated equipment there is no problem to producing clean work—no need for an air-conditioned room, as some have suggested.

This new material will stand up for months out of doors, during which time it will glow each night without further attention. It has important uses as a guide in darkness on streets, on the highway, in buildings and indeed it offers an excellent future after the war, in industrial buildings, for marking routes and aisles for watchmen and others in lieu of having to burn artificial lights inside and outside. The price, $39.50 per gallon, may sound high, but think of the saving in electricity in a large factory where no one works at night except the watchman!

Available in Solid Sheets Too

The manufacturer of this material, in order to fit it into current demands, has developed a fabricated sheet product that contains all of the properties of the paint proper. This sheet material is easy to apply where a solid material is suitable or preferable. You can buy a square yard for $7.45 and cut it into strips, discs or what not. This sheet material is available now in two colors—clear white, which is the kind mostly used for blackout and darkness illumination, and phosphorescent green which produces a whitish green. The latter product is used where more light is desired for short periods as against the long time use, such as the white type in outside lighting.

Testing Samples in Darkness

One of the interesting tests you can make is to hold a sample for one minute 2-in. from the light source. Next cover one half of its

area with a piece of cardboard. After 30 minutes more, again expose the uncovered sample to the light source for one minute. Next, blackout the room and uncover the entire sample so that both sections are exposed — that one that has been activated for one minute and the other which has been activated for two minutes.

One minute after beginning the blackout, your eyes may still be accustomed to the daylight or artificial light and you may be unable to discern the first section, but the second section will appear very bright. As a matter of fact, the second section will be about 25 times brighter than the first section. Now, cover both samples or sections so as to "black them out" from your eyes, while you are still in darkness. Although you are in complete darkness, you can see objects which were not discernable before.

Remain in darkness, with the sections still covered for 30 minutes. Remove the cover and note the brilliance of the sample. The second section now seems to be only twice as bright as the first one. According to scientific authorities, your eyes are now about 100 times as sensitive to the light from the sample. If these samples are kept in complete darkness and you return hours afterward — or days afterward—and remain an hour in darkness before uncovering the sample, you will be able to notice some light emission.

Referred to as "Phosphorescent" But Contains No Phosphorus

Paint manufacturing companies working with this type of material, guard every move and every word. They even send a special man to follow through whenever an experimental sample is allowed outside their laboratory, so there is little authentic information available for the layman. Those in the art seem to use the term "phosphorescent" for no good reason except that the samples, after being applied, glow like phosphorus. My understanding is, however, that no phosphorus is present.

The pigments are of such nature that they cannot be ground fine like the colored pigments used in ordinary paints and enamels. It seems positive that large particles of pigment are necessary in order to store the energy which is subsequently to be given off as light, therefore, the pigments are necessarily "sandy" which adds another difficulty—the matter of application.

White Primer or Undercoat

In applying this new form of paint coating, there is a combination of two factors corresponding to artificial light bulbs and reflectors, as we know them. In other words, the "primer" coat of paint must serve as the reflector and the luminous paint as the light source. For the reflector, an ordinary opaque white primer is used. In general, the equal of two heavy brush coats completes the job. As mentioned elsewhere in this article, the matter of protection from moisture is exceedingly important. In fact, the British actually recommend protecting this type of coating with two sheets of glass, and with the edges of the glass "sandwich" sealed or weatherproofed also.

One of the illustrations at the beginning of this article shows a stairway in which the front edges of the treads and the handrails have been treated with luminous paint. This marking can be applied either with the paint or with the

sheet material cut into strips to fit the job in hand. Exit doors, fire-hose, reels and other fire-fighting and emergency equipment also may be marked. As time goes on this marking may be put on at the factory where the equipment is made, especially if the war lasts.

In order that the resulting darkness will not mean panic, and so there will be "light" for those who must move about, this coating of certain areas with luminous paint offers enough subdued light to permit people within to find aisles, windows, doors, etc. While the illustrations appear to show considerable brightness, there is no actual effect of that kind and no enemy airmen could see the faint glow produced by this luminous paint. Another point in favor of this system of faint illumination is the property of the human eye; it must have a little time to accommodate itself to total darkness, and this a fast moving enemy airman cannot do.

Spray Equipment Catalog

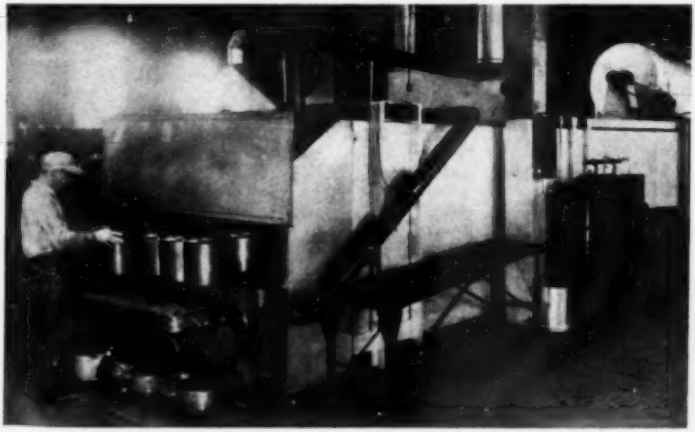
Catalog No. 80, a 32-page 8½x11 booklet, has just been issued by the Eclipse Air Brush Co., 400 Park Ave., Newark, N. J. It covers their complete line of spray equipment for both manual and automatic operation, in addition to their Pneumix air-motored agitators for all mixing jobs in batches up to 200 gallons.

The introductory section of the catalog outlines the reasons for the low pressure principle under which all Eclipse spray equipment operates.

This free-on-request booklet is illustrated with many pictures of the equipment in operation on various types of work.

Sealing Solutions for Porous Castings

"Bakelite Sealing Solutions for Porous Castings" is the title of a new 4-page folder issued by Bakelite Corporation, Unit of Union Carbide and Carbon Corporation, 30 East 42nd St., New York, N. Y. The folder explains the use of these solutions for reclaiming metal and alloy pressure castings, and contains instructions for impregnation of castings and baking operations.



A tunnel-type continous-conveyor oven used for baking finishes on cans and containers. Several interesting features are shown here. Photo, courtesy Despatch Oven Company.

Color and Control Room

FOR THE INDUSTRIAL FINISHING DEPARTMENT

BY NORMAN H. VOIGT

TODAY the finishing room is more than just a place for the application of protective and decorative coatings. Many modern establishments need a "color and control room" to be used as a proving ground for the finishes of today and of the future.

Those who have outfitted such a room are in position to appreciate its value, but there are others who believe that this type of work should be done entirely by the finishing material manufacturers. While we all know that the chemists and formulators of materials make every effort to understand their customers' problems, and while they do supply them with the finest materials available (or try to supply what they can in these war times) often they cannot completely duplicate the conditions existing in each individual finishing room.

Naturally, the control room of the product manufacturer does not in any way eliminate the strict laboratory control maintained by the finishing material manufacturer. It is intended to supplement the efforts of the chemist and the formulator in the creation of better finishes.

Use it for Your Own Check-up on Materials

The lack of a "color and control room" in the finishing department often results in misunderstandings between the supplier and the user of finishing materials. Materials that satisfy one customer may be entirely wrong for the purposes of another. Sometimes excellent finishing materials are rejected as inferior whereas, by careful testing in a control room of the product manufacturer's finishing department, they would have proven to be actually superior in color retention, adhesion, durability, etc. These are qualities that are not readily apparent to the eye upon casual inspection.

When product manufacturers work hand in hand with the finishing material manufacturers, by testing the materials and samples in the control room, before their application in production, there will be a realization of economies by both parties.

Compare and Test Materials for Specific Requirements

With the aid of a "color and control room" (similar to the illustration marked Fig. 1) a finishing foreman is able to compare, test and determine the general merits of the materials and samples for their suitability in view of the conditions existing in his department.

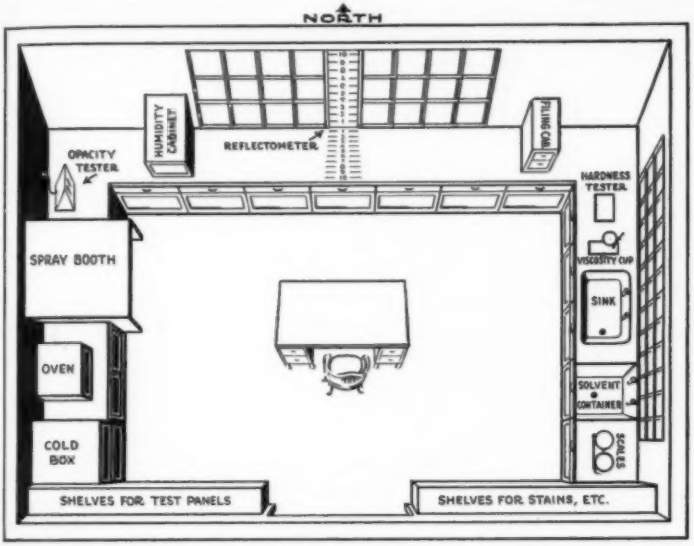


Fig. 1—Looking down into the color and control room where all equipment is in position. A skylight may be used, if available, for making various fading and yellowing tests.

When a foreman receives two similar materials from different sources, the facilities in the control room will enable him to quickly and accurately compare the merits of both materials. This system will reduce costly stoppages in production and prevent repair refinishing caused by materials being unsatisfactory in viscosity, color, sheen or durability.

The lowering of finishing costs would be especially noticeable in high production conveyorized plants. Today all operations must be synchronized if the full value and economy of the conveyor system is to be realized. Thus, if one sprayer is supplied with improper materials, the conveyors must be stopped and finishing operations must be suspended until the error is found and corrected. Several 5-minute interruptions can easily mean hundreds of lost "man-minutes" on a conveyor line employing 30 to 40 workers.

A practical "color and control room" need not be as elaborate or expensive as that maintained by the finishing material manufacturer. The kind of equipment necessary for adequate control depends on the product receiving the finish. A plant manufacturing wood furniture, for instance, using stains, clear varnishes, and lacquers as the principal coaters, will find the following equipment essential: (If the product is metal, a few additional pieces of equipment will be necessary.)

What Equipment is Essential

INSULATED COLD BOX—This box will be used for testing varnishes and lacquers to determine their resistance to checking (resiliency of film) when subjected to alternate hot and cold cycles.

An old 50-lb. ice box can be converted into an electric cold box by installing a large refrigerating unit in the bottom compartment. Use a large unit so that the temperature will reach well below 32° F. and preferably to zero or below. Most finishes that receive hot and cold tests are subjected to temperatures varying from 10° F. to 0° F. for the cold phase cycle, and 120° to 200° F. for the hot phase. However, it is not necessary to follow the exact standards of any company. You can decide on your own standards. If the cold box will only reach as low as 5° F., then more cycles will be necessary to break down the film being tested and, since the testing will be comparative, all practical considerations will be served. Provision for air and humidity circulation can be made by means of a small fan installed in the top compartment of the box.

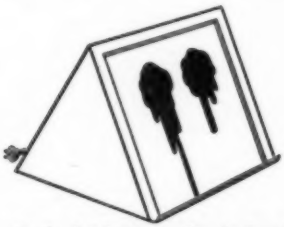


Fig. 2—A simple device for testing the opaqueness or hiding capacity of paints. This box, with its triangular ends and sloping top sides has one sloping side made of glass. Inside and just under the glass side (2½-in. from it) are two flourescent lights of tubular shape, each tube extending from near the top to near the bottom of the box. Paint to be tested is brushed or poured onto the glass side near the top and allowed to run down as shown. Two different samples are poured side by side as shown, each one directly over the flourescent light which is below the glass surface.

INSULATED OVEN—This oven can be heated by electricity, indirect gas, oil or steam. The average plant will need only a 4 or 5-cu.ft. capacity oven for small panels. Temperature range for wood need be only up to 200° F.; for bake finishes for metal, up to 400° F.

SMALL SPRAY BOOTH—This booth will be the conventional type equipped with a small turntable.

OPACITY TESTER — This equipment is used for comparing the clarity of flat coaters. It is also useful for comparing the hiding capacity of paints, enamels and pigmented coaters in general (See Fig. 2).

REFLECTOMETER — This device is for comparing sheens of lacquers and varnishes with the master standards. Readability of numbers reflected on test panels gives the comparative sheen. (See Fig. 3.)

CARD FILE—Records of viscosity, hot and cold-check tests, etc., of each shipment of finishing material should be kept in this file.

HARDNESS AND ADHESION TESTER—Ordinary pencils ranging from 5B to 9H in hardness are blunted and kept in a rack. To test a film for hardness and adhesion, push the blunted end of the lead into the film at an angle of approximately 45°. A little experience will soon familiarize the operator in judging the tenacity and hardness of the film. First use the softer lead 5B, if this does not pierce the film, then try the harder pencils. The degree of hardness of the lead used that pierced the film determines the toughness of the film.

VISCOSITY CUP AND RING STAND —either Ford or DuPont cups are

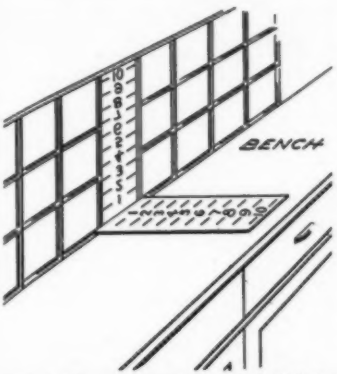


Fig. 3—The reflectometer is installed by removing a vertical section of window and replacing it with a full-length pane of glass which is divided into spaces and lettered or numbered in vertical position, as shown. Finished panels to be compared for sheen are laid flat and side by side on the workbench in front of this pane of glass.

satisfactory for this testing of viscosity. For this test you will need a stop watch.

SOLVENT CONTAINER—For washing graduates, etc.

Scales, sink, shelves for test panels, storage for stain powder—these are essential to complete the equipment necessary for the control room of each manufacturer.

If possible, locate your "color and control room" so that it will receive light from the north. This is desirable for a careful matching of colors. Avoid reflection of light from adjacent buildings, especially if they are brightly colored.

The equipment, as listed in this short article, is purposely made elementary for the use of those not trained in the technical field of paint formulation.

An average foreman would be able to use this practical testing equipment in a short time. He and his organization would be taking a progressive step toward better finishing for today and the future if they had such equipment available and used it.

Refinishing Shop

SOME TIME back I notice that "R. F. J." asked about starting a refinishing business. Now is a good time for such work. There will probably be a shortage of new furniture, plus high prices, so the old must be saved and restored or remodeled.

A furniture refinisher must be an expert, as this calls for all knids of finishing. A man may have to stripe, decorate, or match a French polish or lacquer or varnish job. It may be a painted piece or an antique to be restored, to still look old. There may be a new piece to be matched with an old one, or an old article to be matched with something new. The refinisher must be an expert on colors.

First, it is necessary to have a large clean well-lighted room with heat. A small spray gun is very desirable but not absolutely necessary. For materials you will need stains of various kinds and colors, sandpaper, steelwools of different grades, shellac, varnish, oil colors, paints, enamels, fillers, varnish remover, turpentine, polishes — and various other things will come up as you go along.

You must know how to figure the cost of your jobs, whatever they may be. My advise would be for you to secure a topnotch finisher to help you, as it takes years of experience to learn this business. The changing of methods and materials presents new problems to solve all the time.—J. K. COOPER.

PROBLEMS YOU FACE AND CAN SOLVE

When Coating Plastics

By

William M. Martin, Sales Manager
Elmer P. Stark, Technical Director
with Speed-O-Laq Products Co.

THE PLASTICS industry, both in the field of creating new molding compounds and in processing these combinations is, without a doubt, recognized as having the greatest potential of any industry in the world today.

While developing these outstanding products the plastic chemist has kept in mind several main objectives, such as rapid cure, rigidity, strength and good resistance to heat, electricity, water, solvents, etc.

Due to the fact that pigmented colors or dyes can be incorporated into these various combinations with beautiful results, the fact that these plastics may, under certain conditions, require a coating of clear or color for various essential reasons, has not, until recently, received any consideration from the various plastic manufacturers.

We, as lacquer manufacturers, know the problem of coating plastics is one of utmost importance to many fabricators of plastics, whether their products be sheets, rods, tubes, compression or injection molding. This is especially vital today, since defense needs for aluminum and zinc have created a demand for substitute products.

Every day our mail brings inquiries from all over the country and the way most of these inquiries are worded has impressed upon us how little thought has been given to the coating problem. For instance, one large manufacturer of radios wrote: "We are going to manufacture certain parts out of cellulose acetate, butyrate, polystyrene or methyl methacrylate. Please send us a sample of black lacquer."

There simply is no one answer to such a request. Each plastic would require a different formulation of lacquer as to solids and solvents and, in addition, the chances are that each formulation would require a variation in solvency comparable to the amount and type of plasticizer used in the plastic.

Our experience, gained through our acting as suppliers of lacquers, both clear and in colors, for a large variety of plastic fabricators, is that there is no "cure-all" or single lacquer that may be used on the growing number of plastic formulations.

While plastic chemists endeavor to produce combinations that are not affected by solvents, when the

[*to page 37*]

Avoid MAGNESIUM DUST FIRES

This Mahon Hydro-Foam Dust Collector is available in either Single or Double Bench models for the accommodation of one or more operators.

With THE MAHON HYDRO-FOAM DUST COLLECTOR

If you grind—buff—or polish—magnesium alloy castings in your plant you have one of the greatest potential fire and explosion hazards known. Magnesium dust can ignite from the smallest spark—with mighty disastrous results. Dust collecting systems, that convey the dust through ducts to a distant point, provide little or no protection. *Magnesium dust should be immersed in water—immediately.* That is exactly what the Mahon Hydro-Foam Dust collector, pictured above, accomplishes. In one compact Unit there is embodied a hooded, ventilated work bench combined with a mechanism for depositing this dangerous dust under water. Operation is remarkably simple. Merely start the exhaust fan (the only moving part) and all dust, chips and shavings are instantly drawn through a wooden grillage set in the bench and completely submerged in a tank of water directly below. The Unit is portable and may be set up anywhere that water, sewer and electrical connections can be made. You will surely want to know about this latest development of Mahon engineers that is so essential to safety wherever magnesium alloy castings are processed. Write for complete particulars—at once.

THE R. C. MAHON COMPANY • DETROIT • CHICAGO

Speed Up War Production — Save Days and Dollars with this Special Mahon Industrial Equipment

Hood Cleaning Machines, Rust Proofing Machines, Hydro-Filter Spray Booths, Ovens of All Types, Filtered Air Supply Units, Hydro-Foam Dust Collectors—and Many Other Units of Special Production Equipment—Including Complete Finishing Systems.

MAHON ★ ★ ★

THIS MACHINE PAINTS

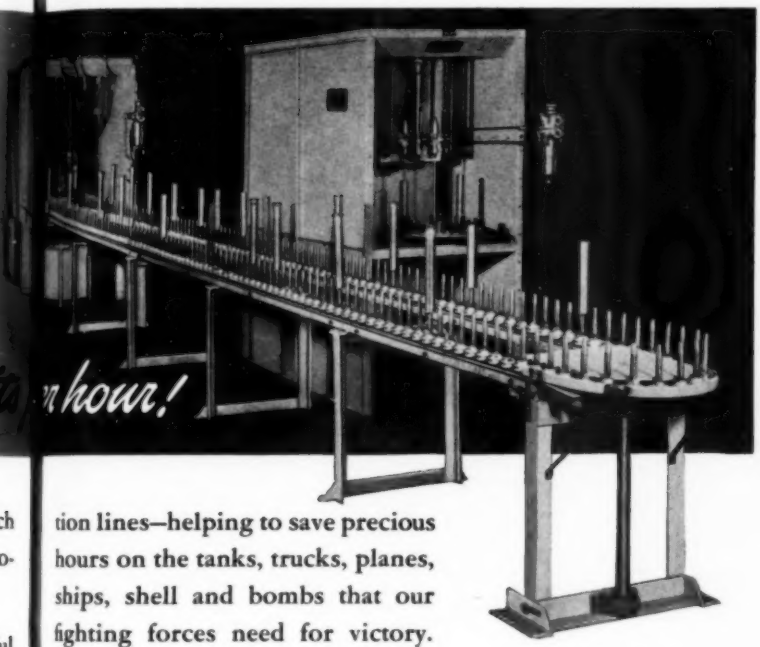
M 54 *Incendiary Bombs*

AT SPEEDS UP TO 2000 units

Here's an example of the finishing speed for which DeVilbiss Spray Systems are responsible in the production of vitally needed war materiel.

M 54, four-pound incendiary bombs require careful painting—acid resisting black in the charge container, zinc primer in the detonating tube, and an overall outer coat before assembly. This DeVilbiss machine does this triple job on 2,000 parts an hour, 24 hours a day —and meets every Government painting specification.

Other DeVilbiss installations are designed for every type of arms and munitions requiring coating or finishing. In ordnance plants, arsenals, shipyards and factories they're keeping pace with the fastest produc-



tion lines—helping to save precious hours on the tanks, trucks, planes, ships, shell and bombs that our fighting forces need for victory.

Men without arms can't fight. They can only wait. If your plant is engaged in war production, don't make 'em wait on slow, obsolete or inadequate finishing equipment. Let modern DeVilbiss Spray Systems help you do YOUR job faster—better.

THE DEVILBISS COMPANY • TOLEDO, OHIO
Canadian Plant: WINDSOR, ONTARIO

DEVILBISS
SPRAY SYSTEMS

We are in a position to supply this excellent stripping solution, even in large quantities. At the present time there is no priority affecting the raw materials.

LEA Synstrip is a liquid synthetic enamel stripper made especially for baked enamels such as the Glyptal and Urea Formaldehyde types, also many air dried finishes. It is fast and clean-working, leaving the metal surface in its original condition. The article can be rinsed with water, dried, and immediately re-finished.

LEA Synstrip does not corrode, etch or stain Aluminum, Brass or any other metals. It can be used at room temperature, but operation at 160° F. and higher is preferable.

Shipped in 1 or 5-gallon cans; 50-gallon drums.

3-LM-9

THE LEA MANUFACTURING COMPANY

WATERBURY, CONN.

Specialists in the Production of Clean-Working Buffing and Polishing Compounds

problem of coating is presented to us, it is our job to develop the proper solvent combination for use in our lacquers. We must supply something that will not cause wrinkling or plasticizer exudation which would soften the coating—and still it must form an impervious coating.

The demand for lacquer to be used on plastic items is caused by numerous reasons. We find, for instance, the necessity of a clear lacquer for use on various products where it may be essential to protect printing, such as advertising novelties or playing cards.

In addition, a molder or fabricator may wish to make large runs in a clear plastic, whether by injection, compression or sheet forming, and then lacquer in assorted colors to suit his customers. In this category we furnish manufacturers of plastic fish baits with a large line of brilliant colors. This is also true of shoe manufacturers.

Principal Kinds of Plastic Materials

Generally the plastics each have individual characteristics and we are listing here our laboratory findings as to their adaptability in being coated successfully with lacquer. We are only considering the materials usually submitted to us.

1—Cellulose Nitrate
2—Cellulose Acetate
3—Cellulose Aceto-Butyrate
4—Phenolics
5—Ureas
6—Vinyl
7—Polystyrene
8—Methyl Methacrylate
9—Ethyl Cellulose

Cellulose Nitrate or Nitrocellulose

This plastic has long been in use. The finishing of its surface is comparatively simple, since lacquers based on nitrocellulose are readily available and require no unusual formulation or technique for application to rigid molded parts.

In the case of sheet celluloid the finishing problem varies a little due to the fact that the same elasticity must be present in both the plastic and the coating in order to avoid curling or warping. However, we have had no trouble in producing successful celluloid lacquers.

Cellulose Acetate

Plastic made of cellulose acetate offers perhaps more problems to the lacquer manufacturer than any other. This is due to the tendency to have plasticizer migration; also wrinkling because solvents in the coating release stresses set up in the surface during the forming of the molded part, etc. These characteristics are particularly pronounced in this material. Some types of this plastic may be considered impossible to successfully finish with any coatings now on the market.

This is particularly so with the easy-flowing, soft types of acetate plastics. On the other hand, a certain few acetate plastics are relatively easy to coat. Nitrocellulose-base lacquers can be used when properly formulated, and where this is possible a one-coat finish of good luster is practicable.

In between these two extremes lies the vast majority of acetate plastics and it is for these that the finish formulator has to produce satisfactory adhesive, tough, moisture-resistant, non-resoftening lacquer coatings. This usually calls for a cellulose-acetate-base lacquer. Each type of acetate plastic has to be treated as a special

case and the proper coating devised. In pigmented goods, this means a 2-coat operation to produce a gloss, as the low solid content of the acetate in a lacquer of this kind results in a dull finish and requires a final coat of clear to produce a luster.

Reground acetate scrap is very difficult to coat, due to the mixture of acetates of different flowing temperatures.

Any molder contemplating an ultimate decorating or finishing operation on a molded acetate part should not use a plastic that has for its coloring matter, dyes or bleeding pigments where the bleeding would cause trouble. For example, a black toned up with a dye for jetness and subsequently decorated with white would turn yellow or some similar light shade.

Aceto-Butyrate

This plastic, fast growing in popularity, offers no special difficulty from a finishing angle. Usually it can be coated with a properly-formulated nitrocellulose lacquer. We have had no difficulty in furnishing a satisfactory lacquer for this plastic.

Phenolic and Urea

These plastics may be considered together, for while they differ widely from a molder's standpoint, they have much in common from the standpoint of the coating formulator. They have an extremely hard dense surface and require a coating material that has unusually good adhesive qualities. For best results this generally calls for a baking type of finishing material. Some excellent finishes of this type have been produced.

Urea is particularly interesting at present as a replacement for aluminum. It has the necessary strength and may be had in a wide range of colors, including white. For example, where a part formerly was made of aluminum and then coated at certain areas with white or trim colors, a white urea is used and then it is decorated with the trim colors. These colors may be furnished in a lacquer or synthetic enamel base, air-dry or bake, depending on performance requirements.

Polystyrene

This material is unusual from a finisher's standpoint. It has a very hard surface which is difficult for a coating to adhere to, yet a lacquer containing aromatic hydrocarbon solvents has a pronounced wrinkling effect, due to the solvency of polystyrene in this type of solvent. The finishing is confined to the use of air-dry materials, since any appreciable amount of heat causes distortion of the molded part.

Lucite or Methyl Methacrylate

In general, the same problem as presented by plastics made of Acetobutyrate.

Vinylite

We have not had a great deal of experience with this material. In the few specimens examined, a nitrocellulose-base lacquer coating was applied and it withstood humidity and adhesion tests very well.

Concluding Remarks

In general, reground materials or heavily plasticized free-flowing materials are not suitable for lacquering. In either case, if a lacquer is produced for use on these types, most likely it will soften back under extreme humidity. Most types of plastics may be lac-

quered in clear or color if the formulation is kept within certain bounds.

One of our plastic lacquers—a coating for use on cellulose acetate —literally becomes a part of the molded plastic to which it is applied, and it is as indestructible. However, if this coating is used on reground or too soft a formulation, extreme wrinkling will result. Several of the large manufacturers of acetates have collaborated with us on this problem and their representatives know which formulations to recommend when the problem of lacquering develops.

If a problem of lacquering arises, do not consider it of minor importance. The finish, as produced, may undo all the carefulness and skill you have shown in molding. The final appearance of the molded product, regardless of its other merits, may "make or break" the sale. Successful lacquer finishes can and are being produced. Give the problem careful study and obtain a coating "tailor-made" for the particular formulation of the plastic you are using.

Fire Extinguishers Dependable?

FIRST-AID fire protection becomes vastly more important under civilian defense than it ever has in the past. In any stage of the emergency, whether planning protection against fire from ordinary causes, from sabotage, or from invasion, it is vital that portable equipment, designed for striking at the incipient fire, be in proper working condition.

As the nation focuses its attention on fire safety to conserve national resources, it is only good judgment to inspect and recharge fire extinguishers. Given normal care, they are good for many years of service.

Particular attention should be given to the 2½ gallon extinguishers that are pressure containers, the soda-acid and foam types. For maximum efficiency, they must be properly charged. The following rules for doing this work apply to extinguishers approved by the Underwriters' Laboratories, Inc.

1) Inspect the extinguisher before emptying the old charge. Look for these things: clogged nozzle; distortion from a blow or fall; evidence that seams have been resoldered. If any of these conditions exist, do not invert the extinguisher and empty it through the hose. Unscrew the cap carefully, remove the cage and acid bottle or foam inner container and dump out the liquid contents of the shell.

The same precautions should be taken if it is suspected that the extinguisher has been frozen.

Do not attempt to correct or to solder seams. Send the unit to the manufacturer who will make the necessary repairs and submit the unit to a pressure test before returning it to you, or will advise you that repairs are inadvisable.

2) If the extinguisher appears to be in working condition, it may be discharged in the normal manner by inverting it. At this time give persons an opportunity to become familiar with the "feel" of an extinguisher by emptying the old charge on a practice fire if possible.

3) After the extinguisher has been emptied, make certain that all the liquid contents have been discharged, and allow a brief interval before unscrewing the cap for residual gas to escape through the nozzle. Some extinguishers have vent holes drilled through the cap so that after a thread or so is turned, in removing the cap, the holes allow any undischarged gas to escape.

4) Remove foam solution container or cage and acid bottle, putting aside the load or porcelain stopple for replacement after recharging.

5) Wash all parts thoroughly in lukewarm water, rinsing the shell well and drianing the water out through the hose.

6) The nozzle can be cleaned with a suitable brush or piece of stiff wire if necessary.

7) Inspect the hose and head gasket for signs of deterioration (hardness, stiffness, breaking or checking). Re-

The War and Our Advertising

Because our country is at war, we are voluntarily omitting from our advertising all facts and figures which could in any way be interpreted as "aid or comfort" to our enemies. The details about this and other BINKS installations are available to all qualified persons upon request.

— Binks Manufacturing Company

The photograph shows a part of a BINKS Dust Collecting System and Spray Painting Installation at Danly Machine Specialties, Inc., Chicago, Ill. Under this scientifically lighted canopy grinding and sanding operations are carried on preliminary to the spray painting of the products. All dust is quickly collected by the fiber glass filters in the back of the booth. This eliminates to a great extent the costly and time-consuming work of the usual "housekeeping" necessitated by these operations, and keeps the air clear of dust harmful to finishing, health and employe spirit.

Not shown in the photograph is a BINKS Dynaprecipitor Water Wash

BINKS

NEW YORK - DETROIT - SAN FRANCISCO - PHILADELPHIA - PITTSBURGH - CLEVELAND

Spray Booth used to spray paint the finished Danly products. In this type of booth the paint-ladened air is rapidly drawn through a special BINKS water curtain which washes fumes and stray paint from the air before it is discharged.

The name "Binks" has been famous in the finishing field for nearly half a century. On the basis of this reputation the Company has been called upon by the Government and defense and war industries from coast to coast to help speed up finishing departments to meet America's greatly accelerated production. The valuable experience gained by BINKS engineers in this work is available to all manufacturers who are working toward Victory.

To be sure of the best in spray painting and finishing equipment, remember to ask for BINKS.

MANUFACTURING COMPANY

3114-3140 CARROLL AVENUE • CHICAGO, ILLINOIS

ST. LOUIS - MILWAUKEE - BOSTON - LOS ANGELES - SEATTLE - WINDSOR, ONTARIO, CANADA

place them, and any other necessary parts with parts obtained from the extinguisher manufacturer.

8) Clean out any clogged holes in the strainer.

9) Use only charging materials supplied by manufacturers of extinguishers approved by Underwriters' Laboratories. Dissolve the powdered chemical in water outside the extinguisher and follow the instructions on the package containing the new charge.

10) When putting the chemical solution into the shell of the extinguisher, fill it to the filling mark, never above it.

11) Place lead or porcelain stopple on foam solution container or acid bottle. Insert foam solution container in extinguisher or place acid bottle in cage in the neck of the extinguisher.

12) Before screwing the cap on the collar, vaseline should be placed on the threads to facilitate the work.

13) Make certain to return to each extinguisher the cap that was removed from it.

At least four threads of cap and collar must be engaged and threads should be inspected to make sure they are clean and sharp. The cap must be seated tightly on the gasket when screwing the cap on the collar. These precautions will prevent cap from being blown off by the pressure developed during operation.

14) On the tag wired to the extinguisher note the name of the person recharging the extinguisher and the date on which the work was done.

Leather is "cooperating" with metals to help win World War II. Hides must be tanned properly to meet exacting military requirements. A porcelain enameled "leather plate" has been developed as an aid to proper preparation of hides. The picture shows a large 12x6-ft. sheet of Armco Enameling Iron being sprayed with porcelain enamel in the plant of the Ingram-Richardson Mfg. Co., in Beaver Falls, Penns. The sheets must be absolutely flat, free from imperfections and porcelain enameled on both sides. Hides are stretched tight and pasted flat on both sides of the smooth porcelain enameled plates; this removes all wrinkles from them. The plates, with the hides affixed, pass through a continuous dryer. Then, after proper treatment, the hides are removed. When the tanning process is completed the hides are ready to be used in various defense applications.

Industrial Plants Cooperate In Training Program

Facilities of industrial plants in many sections of the country are being made available this year to help the U. S. office of education train thousands of "out-of-school" youths who will hold mechanical jobs during and after the war.

Administered under a $15,000,000 congressional grant, the program is being centered in non-urban districts where regular trade schools are not available. Direction in each state is under a board of vocational education, which is working with local school boards, industrial firms and other groups to arrange classes.

The Color Blender

In front of him is paddle and pail,
A graduate, spatula, and scale.
His skill he is ready to render.
This man is—the Color Blender.

A lock of hair hung o'er one eye;
Spots of paint flecked his tie.
Of these things he gave no thought,
But only of the color he sought.

Now he blends the yellow and blue,
Then adds some tints to get the hue.
He sprays a panel for a test,
For the color and quality must be the best.

For the Army, a color to camouflage a jeep.
So it can forever put the Japs asleep.
For the Navy, a color to camouflage a ship.
So it can give the Axis subs the "slip".

His work to some may seem quite small.
But he is answering his country's call.
A nation on this man depends
For the weapon colors that he blends.

—JUNE E. VOIGT.

IT'S AS EASY AS PIE

to save a full day with "SURFACENE"

● Here's a "pie chart" that shows you how you can really CUT furniture finishing time and cost with "Surfacene"—Glidden's sensational new 5-hour combination stain and filler.

Old staining and filling methods took two days, with overnight drying on each, before you started sealing and coating the third day. But "Surfacene" stains and fills in one operation—dries in 5 hours—allows sealing the same day. You're ready for finish coat first thing the next morning.

The full day you save will let you maintain former overall lacquer schedules when using varnish. And you cut stain and filler application and handling costs in half.

"Surfacene" comes in all shades for mahoganies, walnuts, oaks and other effects. Send sample color panels and unfinished woods for a demonstration. *Help-yourself* to a slice of better business with this big new Glidden improvement.

THE GLIDDEN COMPANY • National Headquarters, Cleveland, Ohio
Factories or Branches in Principal Cities

• HINTS ON FINISHING ECON

1. WATCH VISCOSITY OF AIN TO SAVE MATERIA

▶ The U.S.A. has declared war on e. Eve finishing department should declare on th stick or spatula test for viscosity of p It lea to waste of vital materials.

TOO HEAVY . . . re higher pressures w cessive overspra waste of materials.

NORMAL . . . Corre cosity provides for and economic appli

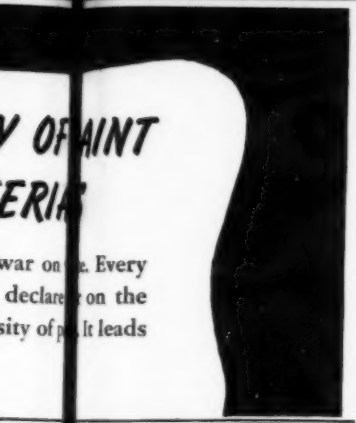
TOO THIN . . . gives sive overspray and because of sagging finish.

2. SET A VISCOSITY STANDARD FOR JOBS

▶ The correct viscosity depends on size and shape of object, color, required hiding, film thickness, speed of work and other factors. When you find the right viscosity for a particular application . . . then stick to it! Check viscosity constantly, using a scientifically accurate method.

3. CHECK EFOR SAVE OPERATO

▶ Accurate co of visc spray operator w uniform tions. If a shop s is set cosity is checke ore spra work, it saves h e, and element is elimi d from



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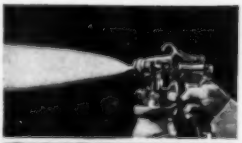

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...HECK BEFOREHAND TO ...VE OPERATOR'S TIME

...ate con... of viscosity provides the ...erator ... uniform working condi... ...shop s... ...n is set up so the paint vis... ...hecked ...ore spray operator goes to ...aves h... ...e, and much of the human ...s elim... ...d from the operation.

CHECK THESE 11 POINTS TO SAVE MATERIALS

NEXT MONTH READ ABOUT

1. Temperature of paint
2. Viscosity of paint
3. Air and fluid pressures
4. Adjustment of spray gun
5. Handling of spray gun
6. Triggering of the gun
7. System in the strokes
8. Uniformity of coating
9. Thickness of film
10. Causes of rejects
11. Touch-up procedure

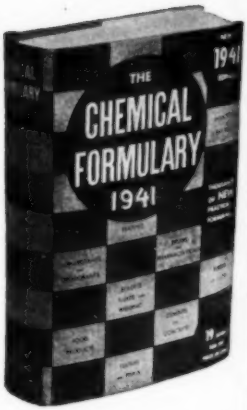
● The Du Pont man can show you how to control these factors . . . can aid you in conserving finishing materials and lowering painting costs. And remember—he's backed by a vast chemical organization with the finest of facilities for developing, making and applying better industrial finishes. When the Du Pont Man calls on you—call on him for help. E. I. du Pont de Nemours & Co. (Inc.), Finishes Division, Wilmington, Del.

Look for a detailed discussion of each point in this monthly series.

The Latest Edition . . .

CHEMICAL FORMULARY

VOL. V



Compiled by a staff of experts

Editor-in-Chief—H. BENNETT (F.A.I.C.)

More than 700 pages (6x9 inches)

Thousands of Latest Tested Formulae From Every Important Industry

Whether you are a CHEMIST, ENGINEER, EXECUTIVE, MANUFACTURER OR LAYMAN—Whatever your manufacturing problems may be, you are sure to find the answer here—authoritatively handled by a specialist and instantly accessible. Throughout, the material has been arranged for quick reference.

NO THEORY—COMPLETE DETAILS FOR ACTUAL PRODUCT FORMULATION

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A PARTIAL LIST OF SUBJECTS COVERED

Rubber & Latex
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Synthetic Resins
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Solders
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INDUSTRIAL FINISHING *Magazine*

1142 North Meridian Street **Indianapolis, Ind.**

FINISHING *Radio Cabinets*

BY JOE WILBOURN

Improved materials are used in present finishing methods; these include stains, fillers, sealers and shading stains; also lacquers and decals, plus rubbing and burn-in patching.

THE ACTUAL finishing operations in use today on radio cabinets do not vary greatly from those used in the past, but much can be said about the improvement of the finishing materials used today as compared to those used 10 or 12 years back.

In the old days, little thought was given to permanency of color, and usually an excessive amount of shading stain was used to obtain a given color. This, together with highly stearated sealers which were demanded by the trade for quick easy sanding, contributed greatly to the early breakdown and general poor quality of the finish.

The general procedure today is as follows:

After the wood has been carefully sanded, a uniform coat of non-grain-raising stain is applied by spraying both solid and veneered parts. Some manufacturers use separate colors on the gum parts to further uniform the job and to decrease the amount of shading to be done later. These stains are so formulated, using water-soluble dyes, that they insure a non-bleeding, non-fading color, and usually they do not raise the grain sufficiently to necessitate a wash coat before filling.

Applying Suitable Filler

After proper drying of the stain, there follows the filling operation, which is all important, for in this operation lies 75% of the ultimate quality of the finish. Some manufacturers use the three or four-hour type fillers (fillers that dry in three or four hours); others prefer the overnight type. In either case the filler must be so formulated as to be perfectly compatible with the succeeding coat of sealer, or many things can happen, such as graying of the pores, poor adhesion, shrinkage, etc.

In extreme cases enough oil from the filler may be pulled up into the sealer coat to prevent the sealer from drying properly. This will contribute to very poor sanding results, which will reflect itself in the succeeding coats in the way of very poor flow. This, in turn, will add much to the rubbing cost, inasmuch as lacquer has a tendency to follow the contour of the surfaces over which it is applied.

Much has been done recently to formulate sealers and lacquers that are compatible to the filler, as well as to each other, so as to give a

satisfactory bond between coats and also to have an equal amount of possible expansion or flexibility —and to improve cold-check resistance.

Decals Sometimes a Problem.

Another problem has confronted the formulators in recent years, with the introduction of decals or transfers into the radio cabinet field. The sealer used on these cabinets must have all of the other desirable qualities necessary and be so constructed as to give a bond to the decal when the decal is applied with the bonding cement employed in this operation. Manufacturers who gave little thought to this have run into serious trouble with blistering and peeling of the decals.

Shading Stain; Lacquer Coating

Now, comes the shading, which has been cut to a minimum by uniforming the wood as much as possible with the non-grain-raising stains. Shading stains today are also formulated to give permanency of color. They are also transparent enough so as not to give a "painted look" to the shaded surfaces, and they are of a type that do not prevent a bond between the sealer and the lacquer coating.

We are now ready for the lacquer coating. Usually this consists of two coats of 21% solids lacquer, ready to spray. Although some manufacturers use 27% solids lacquer, ready to spray, the general consensus of opinion, I believe, is that the 21% solids material has better cold-check resistance, because of the amount and the kind of nitrocellulose used in the formulation.

Wet Sanding; Rubbing

After an overnight dry, the lacquer coats are first cut down to a smooth surface with wet-or-dry abrasive paper, using as a lubricant a rubbing oil reduced with V. M. & P. naphtha or oleum spirits. Some finishers prefer mineral spirits or oleum spirits to keep the surface wet longer. This sanding operation is followed by a thorough "compounding" that removes the sandpaper scratches and brings the lacquered surface to a high gloss. A cleaner usually follows this to remove all oil and compound from the surface, giving the cabinet a clean bright appearance.

Burn-in-Patching

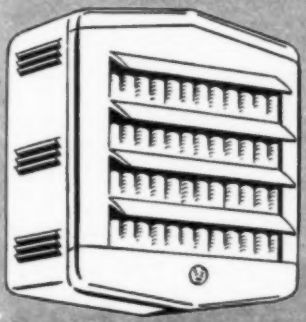
The patching or burning-in operation is another important phase in radio cabinet finishes. Some finishers do what they call "rough patching" on the sealer coat and their finish patching in between lacquer coats. Then after rubbing, this type of work is ready to ship, with possibly a very small amount of touch-up work and small burn-ins. If the patching is all left until after the final rub, there is a great amount of recoat work to be done, which is very costly, both in material and labor.

Tin and Steel Recovered from Used Tin Cans

A process for recovering tin and steel from used tin cans, requiring no preparation of the cans on the part of the householder, or other users of canned commodities, can now be applied to large scale production, according to an announcement by Walton S. Smith, Vice President of the Metal & Thermit Corp., 120 Broadway, New York, N. Y. This company has been operating a test plant at San Francisco, Calif., for five years.

"The pilot plant is a complete unit with a capacity of over 6000 tons. From its operations, suitable methods have been worked out for the recovery of 24 pounds of tin oxide and almost a ton of scrap steel per ton of discarded cans," Mr. Smith stated. "The tin oxide is readily smelted to a grade equivalent to Straits Tin. This is the grade of tin formerly secured from the Malay Peninsula, now in Japanese hands."

A PROTECTIVE FINISH



FOR HEATING AND COOLING UNITS WHEN RUST-PROOF METALS ARE NO LONGER AVAILABLE

Lionoil

If you have a rust problem as the result of switching from copper or brass to steel . . . investigate Berry Brothers Lionoil.

Lionoil provides an ideal protective coating for fan-type heating and cooling units . . . condensers . . . cooling coils . . . air conditioning equipment, and other similar units.

Dip, spray or brush application. Tough . . . flexible . . . adhesive . . . low in cost!

Upon request, we will be glad to submit a sample.

Quality Finishes Since 1858

BERRY BROTHERS

Industrial Varnishes • Enamels • Lacquers

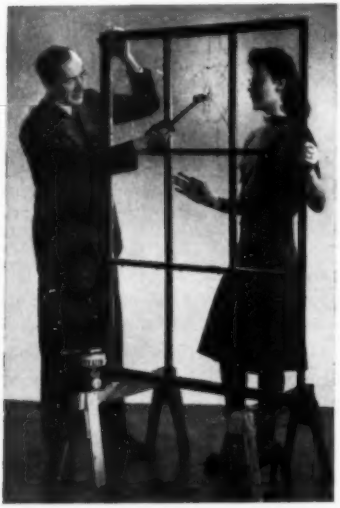
DETROIT, MICHIGAN • WALKERVILLE, ONTARIO

JERSEY CITY • BOSTON • CINCINNATI • CHICAGO • ST. LOUIS

Coating Prevents Flying Glass

Experience in both England and Spain prove that flying glass is air raids' greatest hazard. Bomb blast concussions and earth tremors, causing violent vibration, either blow out unprotected glass or shatter it into thousands of flying pieces. This has resulted in severe personal injury (in England, estimated to be 60% of all casualties), damage to valuable war production machinery, and exposure of buildings and equipment to the elements until repair crews are able to replace and clean up the broken glass.

American chemical research has found an answer to this vital problem in the announcement of a new product known as "Roxaneal" being manufactured by Roxalin Flexible Finishes, Inc., of Elizabeth, N. J. This new glass protector is a water-white, transparent liquid that prevents broken glass from flying. It is not claimed to stop glass from fracturing, but tests have proved that it will keep broken glass in place thus preventing dangerous glass splinters from flying.



M. A. Dorian, Chief Chemist of Roxalin Flexible Finishes, Elizabeth, N. J., is demonstrating "Roxaneal," a new transparent liquid coating that prevents flying glass splinters due to concussion and vibration during air raids. The new material does not obstruct light, is applied by brushing, and may be cleaned with soap and water. When the emergency is over, "Roxaneal" can be easily removed.

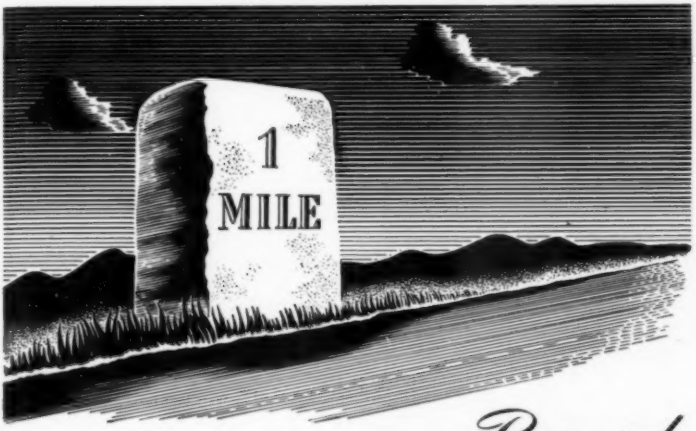
New . . .

MATERIALS SUPPLIES EQUIPMENT

At the proving grounds of one of the country's leading explosive manufacturers, a test was made under conditions which, as closely as possible, resemble the actual concussion and vibration conditions that glass must withstand during an air raid bombing. An ordinary steel window frame was fitted with plain glass, safety glass similar to the type used in automobiles, and plain glass coated with Roxaneal. The window frame was securely fastened in an up-right position, and a stick of 60% dynamite was exploded only 30-in. away from the glass. The plain glass was literally pulverized, while the safety glass and the glass coated with Roxaneal were fractured but remained intact in the frame.

A second test was made in the laboratory of General Radio Co. of Cambridge, Mass., in which the projectile end of a 37-mm. anti-aircraft shell was dropped from a height of 4-ft. to hit plain glass and Roxaneal-coated glass "nose on." Photographs of this test were made at one millionth of a second, which clearly illustrate that plain glass shatters into thousands of splinters, while Roxaneal-coated glass fractured, but remained intact.

Roxaneal is available in clear transparent form which does not ob-



MILESTONES OF *Research*

Milestones or gravestones . . . . they look much alike. They may even be synonymous . . . . if you're not careful.

In the finishing field, technological advance has been tremendous. Keeping pace have come amazing developments in application technique. The finish which led the field yesterday may be dated today.

Only finishing research can keep YOUR product abreast of today's advance . . . prevent your milestone of progress from becoming a gravestone marking just another product buried by competition.

In our files are thousands of formulae created to meet the *specific* needs of forward-looking manufacturers. One of them may be the answer to your requirements.

In our laboratories is up-to-the-minute knowledge of new application techniques which may cut your finishing time, reduce your finishing costs and increase the salability of your product.

Don't let present satisfaction prevent you from being open-minded. Make the next marker a milestone . . . not a gravestone.

Your inquiry incurs no obligation. Address Department "C".

STANLEY

THE STANLEY CHEMICAL CO.

EAST BERLIN CONNECTICUT

Lacquers · Enamels · Synthetics · Japans

A SUBSIDIARY OF THE STANLEY WORKS, NEW BRITAIN, CONN

struct vision or light; it is also available in blackout type. It may be applied by brushing the material on the interior of clean glass. Windows may then be cleaned, when necessary, with mild soap solutions without affecting the strength of the protective film. After the emergency is over, Roxaneal is easily removed either by peeling it off with a razor blade, or by washing it off with solvents.

Silver-Lined Blackout Bulb

Designed for blackout lighting in air raids, the new Wabash Blackout bulb just announced by the Wabash Appliance Corp., Brooklyn, N. Y., provides downlighting in a soft beam of blue light that is safe for indoor visibility during blackouts. The bulb is lined inside with a pure silver reflector lining that hides all filament glare and projects the light downward. Light leaks are prevented by a black silicate coating that covers the bulb up to the extreme lighting end which is a deep blue. The new bulb consumes 25 watts.

Inspector's Hammer

Designed for ruggedness and durability in continuous service, a new inspector's hammer, in which the stamps can easily be interchanged, is offered by New Method Steel Stamps, Inc., 145 Jos. Campau, Detroit, Mich. The hammer is of 1-lb. weight and of "all-steel" design with shank forged integrally with the head and extending through the handle which is of compressed rawhide, heavily lacquered. Head and shank are finished on all surfaces.

The hammer is available with head accurately drilled for round stamps ranging from ¼ to ⅜-in. diameter inclusive. The stamp is held in place by a standard size flush-type set screw, for which a wrench is supplied with each hammer.

Practically any conceivable character design may be had for the interchangeable stamps, including symbols, letters, numerals, insignia, trademarks, etc., with or without borders. All stamps carry the Newco bevel which adds to their ability to withstand severe use without chipping or breaking down the marking characters. Numerous marking designs available for use in the hammer are illustrated in a new general catalog of New Method products entitled "Marking Devices" just issued by the company.

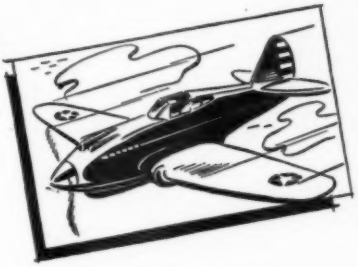
Camouflage Colors

With today's emphasis on defense, the protection of factories working on war materials, power plants, hospitals, and many building structures necessary to the public welfare, assumes vital proportions. Interest, therefore, centers on how such structures may be disguised so that from the air they appear to blend in the landscape.

Camouflage or protective concealment becomes at once a foremost and necessary part of our war activity. Blackout of light and blending with the surrounding terrain may be produced, in a large measure, by painting with materials that give no mirror effects, blend with the natural surroundings, and above all, photograph from the air with the same appearance as does nature's coloring.

The Hilo camouflage colors meet those needs, as called for in Army Specification 1513, and are obtainable in the Hilo camouflage paints which meet Army Specification 1515. These camouflage paints dry with no sheen and adhere well to the usual materials of construction, such as cement, con-

Supremacy Assured when using WALKER'S Protective Coatings



Walker protective coatings are formulated to meet specifications for use on war equipment of all kinds. Assure yourself of getting the best for those defense jobs. Call on Walker and establish a dependable source of supply for finishes . . .

PRIMERS SURFACERS LACQUERS
SYNTHETICS WRINKLES

"Call on Walker"

H. V. WALKER CO.
Elizabeth, New Jersey
MODERN PRODUCTION FINISHES

crete, brick, wood, steel, glass, copper, tin, aluminum, etc. They may be applied by spraying or brushing and they hide in one coate.

They dry to a dead flat, non-reflecting surface. While these paints were developed primarily for Government use, they are available to all manufacturers of defense goods, who may have a problem of protective concealment.

The services of the Hilo organization are available for consultation, without charge or obligation. Colors include light and dark green, sand, field drab, earth brown, earth yellow, loam, earth red and olive drab. For further information, communicate with Hilo Varnish Corp., 44 Stewart Ave., Brooklyn, N. Y.

Small Paint-Circulating System

The new small paint-circulating systems for finishing room use, as announced by The De Vilbiss Co., Toledo, Ohio, are of special interest to the smaller manufacturer because they make available to him all of the economies, safety, and the convenience represented in the circulating system of paint delivery.

The new De Vilbiss Type QBM small circulating systems will supply a maximum of six production-type spray guns in continuous operation, handling such materials as lacquers, synthetic enamels, paints, varnishes, shellacs, etc.

Heart of the new system is the tank assembly. The container is a standard Type QM unit (with agitator), 30 or 60 gallon capacity. The motor-speed reducer-pump combination, mounted compactly on a small platform on the lid of the tank, has been designed especially for this application. Either air or electric motors are available.

Both air and electric motors are of sufficient capacity to circulate fluids with a maximum viscosity of 25 seconds (determined on a No. 4 Ford cup) against an average loop pressure of 50-lbs. per square inch.

The pump used on the new systems is the improved Type QB. It has no packing gland, incorporating, instead, a unique mechanical seal which insures much greater resistance to wear.

Three QBM Systems are available. System "A" is the simplest in design and the least expensive to install. It delivers fluid over a loop no longer than 200-ft., with a minimum internal diameter of ½-in. In this system the material is forced throughout the loop by air pressure; the pump is required merely to keep it in motion to prevent precipitation. Material enters the loop only as it is used and is not re-circulated through the tank.

The heart of small paint circulating system.

In System "B" the loop can be as

SPEEDROY

FLEXIBLE LACQUER

FOR OFFICE FURNITURE

SPEEDROY is the perfect finish for office furniture which is subject to all kinds of wear, tear and severe abuse. It dries fast and produces a hard, durable and attractive finish.

SPEEDROY is made in one of the finest lacquer plants in the country. Prompt deliveries are assured to manufacturers with priority ratings.

A generous size working sample of **SPEEDROY** will be sent on request.

- **UNIFORMITY**
- **QUALITY**
- **PERFORMANCE**

- **Gloss—Rubbing—Non-Rubbing**
- **Satin—Flat—Dead Flat**

NOROY **SEALERS** NOROY

Fill Well—Sand Easily—Good Bond

RUDLACO

RUDD LACQUER CORPORATION
127 MAIDEN LANE, NEW YORK
Factory—Rahway, N. J.

long as 450-ft., with a minimum internal diameter of ¾-in. Included are individual fluid regulators for each gun, thus providing more accurate fluid pressure control than is possible with system "A." The material is kept more uniformly mixed by being constantly re-circulated through the tank by means of the pump which produces a pressure in excess of that in the tank.

With system "C" the fluid is re-circulated through the head of each gun. This is recommended for materials which are difficult to keep in suspension or which otherwise alter their physical characteristics when allowed to remain stationary for relatively short periods. With this system individual fluid pressure regulators for every spray station are provided, as well as a relief valve at the beginning of the low pressure return side of the loop. Piping should be limited to a minimum internal diameter of ½-in. and a maximum length of 200-ft.

Silk Screen Stencil Luminous Ink

Naz-Dar luminous or phosphorus ink does not contain phosphorus and is entirely safe to handle. It glows in darkness for several hours after being exposed to light. It may be re-activated by exposure to any source of light that contains ultra-violet rays. When exposed to the ordinary 100-watt electric lamp for 20 seconds, at a distance of 3-ft. it is reactivated for another cycle. When applied properly it will hold its luminous properties for from one to two years.

Naz-Dar luminous ink is also fluorescent—that is, it glows brightly when activated by a black ultra-violet light. However, it will then have a phosporescent lag of four to five hours and will glow brightly for that period without artificial light. (Naz-Dar also has a fluorescent ink that has no phosphorescent lag and is invisible immediately or within a few seconds after the light source has been disconnected.)

Some of the uses for blackout purposes in the home and industrial plants are for making signs indicating exits, switches, fire plugs, machine controls, stairways and many other objects that will suggest themselves. It may also be thinned for brushing purposes and used for outlining doorways, stair risers, paths around dangerous machinery, exits, etc.

For printing on metal a luminous primer must be used. This also comes in form for printing with a silk-screen stencil, but may be thinned for brushing.

Luminous ink cannot be made as fine as ordinary process ink and while it may be printed through a No. 12 silk, No. 10 is preferred.

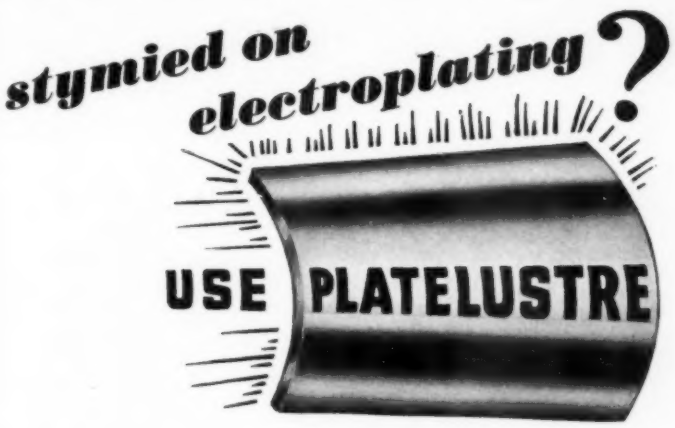
No material other than the one recommended by Naz-Dar may be used in thinning the ink. It must be kept away from all moisture and, for this reason, if a luminous ink is to be used where it will come into contact with moisture or absorb moisture from the air it must be given a protective coating of Naz-Dar luminous clear.

This luminous ink is a product of the Naz-Dar Co., 477 Milwaukee Ave., Chicago, Ill.

Process Extends Latex 50% to 300%

Of interest to users of latex for cementing, impregnating and coating purposes, is a new method of processing that extends the volume of latex from 50% to 300% (depending upon the particular use to which it is to be put) while retaining the major characteristics of the original product, as well as a good proportion of its natural strength. After being extended by the new process, normal (38%) latex is returned to its owner in the form of a 37% concentration and concentrated (60%) latex is returned in the form of a 55% concentration.

Developed in the laboratories of the Union Bay State Co., the process makes use of a filler material of such fine size that it blends extremely well



With the electroplating industry handicapped by priorities and the scarcity of metals, M & W Platelustre is the answer for many a manufacturer who wants a colored metallic finish. Platelustre is a brilliant, semi-transparent finish which makes polished metals resemble other metals, such as brass, copper, bronze, or anodic or chemically treated aluminum or steel.

Platelustre is applied by spraying or roller coating and is available in a large assortment of colors, which, for interior use, are fast to light. It is supplied for either air-drying or baking. Two color finishes can be obtained by "relieving" operations. Flat stock finished with certain grades of Platelustre can be formed after baking.

Among the consistent users of Platelustre are manufacturers of compacts, casket hardware, lighting fixtures, novelties — and other products where a brilliant, colored metallic finish is desired.

Our service department will
gladly give you full particulars.

Maas and Waldstein Co. Newark, N. J.

Branch Offices and Warehouses . . . 1650 Carroll Ave., Chicago . . . 1238 W. Pico Blvd., Los Angeles

LACQUERS **PIONEERS IN PROTECTION** ENAMELS

with the rubber particles. This effective blending characteristic, together with the filler material's many points of similarity to latex—it responds to the same reagents, has the same wetting out properties, penetrates and dries in the same manner, and even is susceptible to vulcanization — makes the extended product readily adaptable to most customary cementing, impregnating and coating operations.

The efficiency of latex extended by this new process has been amply demonstrated in actual practice; and sufficient data is on hand in the Union Bay State Co. laboratories to enable quick, accurate answers regarding the process's extending potentialities in connection with specific problems.

Because conserving and extending the usability of present latex supplies is of such great importance to America's war efforts, every government allowed user of latex for cementing, impregnating and coating purposes is urged to investigate the process's extending possibilities without delay. All inquiries should be addressed to Laboratory E90, Union Bay State Co., 50 Harvard St., Cambridge, Mass.

Blackout Painting

Hilo Blackout Paint conforms to the specifications of the Camouflage Committee of the National Paint & Varnish Association for Type 1.

This product is waterproof and may be used for inside or outside. It blacks out fluorescent and other lights; flows out to a smooth, even, dull finish, giving complete blackout in one coat; resists heat up to 212°F.; hides approximately 500-sq.ft. to the gallon (more or less according to the smoothness of the glass); dries to touch in 15 minutes; is hard in two hours; can be removed with kerosene or other mineral solvents.

Directions: Be sure the side of the glass on which the material is applied is clean and dry. Apply blackout paint in a full, even coat. May be brushed or sprayed as it comes in the can. Do not reduce.

For complete blackout and elimination of all glare and reflections from smooth glass, the Camouflage Department recommends that these surfaces should be painted on the outside.

This material is a product of Hilo Varnish Corp., 42 Stewart Ave., Brooklyn, N. Y.

Rust Control Paint

Rust-Oleum is a fish-oil vehicle paint that has no fish odor and will dry in four to eight hours, depending upon atmospheric conditions and the type of Rust-Oleum paint used. It is a durable paint to be applied to rusty surfaces after the loose rust has been removed. It penetrates the surface, adheres perfectly, levels out smooth and affords long protection to the surface underneath it—withstands practically all kinds of exposure; can be applied by brushing, spraying or dipping, and is available in several different colors.

Different variations of the paint are available for special purposes, such as for waterproofing porous materials, making surfaces resistant to chemicals, salt air, etc. This paint and thinners for it are products of Rust-Oleum Paint Corp., 1930 W. Grand Ave., Chicago, Ill.

Useful 1942 Almanac Free

Containing several sections devoted to the care and maintenance of tires, and thus the conservation of rubber, in addition to the usual content of such publications, The B. F. Goodrich Co., Akron, Ohio, has just published its 1942 Farm and Home Almanac and is distributing copies free to anyone who requests them.

"Tire Health Rules that Save Rubber" is the title of the section devoted to passenger car tire maintenance.

A 4-page insert of enamel paper shows 114 North American birds in full color.

A few of the chapter heads are: Your Defense in the Air, 17 Ways to Save Gas and Oil, Know Your Armed Forces, Your Horoscope Up-to-Date, Tomorrow an Age of Petroleum, Your Government, Nine New Puzzles, etc.

FOR A HALF CENTURY American industry has looked upon EGYPTIAN FINISHES as a yard stick with which other similar types of finishes were compared and measured.

Today they are more than ever a standard of comparison. Particularly in defense work. No manufacturer, engaged in this important work, can afford to take a chance with inferior or untried finishes. He hasn't the time, nor can he afford to experiment. EGYPTIAN FINISHES are being used in ever increasing quantities on all types of defense work requiring a finish.

To manufacturers engaged in defense work we extend a cordial invitation to discuss their finishing requirements with us. Our experience in this particular line may prove of value to them.

THE EGYPTIAN LACQUER MANUFACTURING CO.
ROCKEFELLER CENTER NEW YORK

EGYPTIAN FINISHES

EGYPTIAN Superior FINISHES

36-in. Masking Tape

For several years the automobile industry has been using a masking tape for protection in shipping. We understand that this tape comes in widths up to 36-in. wide. At the present time we have a problem which we feel could be solved possibly by the use of such material.

In this connection we would appreciate your advising us what information you have on this and at the same time give us the names of manufacturers producing tape of this nature and width. Also, what types of dispensers are best suited for handling the material?—D. A. Co. (Furniture).

EDITOR'S NOTE: *We believe that both of the nationally known manufacturers of industrial tape, which have advertised in this magazine, can supply 36-in. tape. Copies of your letter were sent to both of them. One replied as follows:*

The automotive industry uses various types of Scotch adhesive tapes, depending upon the type of protection desired.

With regard to 36-in. width tape, Scotch No-Mar Protective Tape is used to cover polished metal, stainless steel, certain types of plastics and, in general, those finishes that are not affected by the adhesive used in this tape. This material, Scotch No-Mar Protective Tape, is available only upon presentation of orders carrying priority certificates of A-1, A-2 or A-3.

Scotch masking tapes are also used for various protective purposes, particularly on wide widths where the tape is used to hold the protective paper in place, the adhesive side of the tape adhering to a surface which is not considered easily disturbed or blemished.

Questions; Answers

Questions are welcome and will be answered promptly by mail. Readers are invited to prepare and send in additional information relating to any of these questions and answers.

It must be pointed out that due to the number of variables in the field with which the tape will come in contact, such as heat, sunlight, atmospheric changes and high humidities, we do not suggest the use of pressure-sensitive tape applied to varnished or painted surfaces where the tape will be expected to remain on that surface for extended periods of time. Our laboratories will be glad to conduct tests where there is any question of the tape disturbing the finish of your product.

A copy of this letter is being forwarded to our Chicago Office, which services your territory. No doubt they will have the salesman in your district call on you within the next few days to further discuss this matter and show you various types of our tape constructions and their possibilities.—MINNESOTA MINING & MFG. CO.

How to Finish Wood Kitchen Cabinets

Please send us information on finishing plywood and solid wood kitchen cabinets. The method we now use calls for two coats of lacquer sanding sealer, sanded between coats, and two coats of white

PRESERVED FOR THE AGES BY A

Protective Finish

An artist varnishes his painting to protect it against dirt and to react against the physical and chemical attacks of the atmosphere.

This final finish is indispensable if the original freshness and beauty of the painting is to be retained indefinitely.

Many commercial products can likewise be both preserved and beautified by a protective finish of varnish, lacquer or paint.

Our Creative Studio will analyze your finishing problems and suggest practical solutions if you are interested in such a service.

ROCKFORD VARNISH COMPANY

INDUSTRIAL FINISHES

ROCKFORD • ILLINOIS

enamel, but we cannot seem to get the desired result which we have seen on other cabinets of this type. We want a finish that will fill the cross-cut edges of the plywood.—E. L. Co.

The customary practice of production manufacturers is to use a 2-coat system. The finish I have in mind has been adopted and is now in use in production in one of the largest kitchen-cabinet and bathroom-furniture factories in the country. The finishes were subjected to bar soap, hot water, steam, soap solution, vinegar, butter, lard, lemon juice and boiling-hot coffee. A finish must stand all of these tests, for these things come in contact with this type of furniture day after day and it must stand up under this severe service.

The cabinets should be inspected in the white wood for cracks, holes and dents. The defects should be filled properly with a non-lifting, non-shrinking cabinet patching filler. See that the pieces are sanded smoothly. In other words, have a good foundation.

On end wood, which usually absorbs excessive amounts of finishing material, use a lacquer glazing putty. Knife it on with a stiff putty knife. After this has dried thoroughly, sand the surface smooth, using No. 3/0 finishing sandpaper and naphtha—and sanding it to conform with the shape of the end wood.

Spray a light coat of oil primer on the end wood first; they spray a wet coat all over the piece. Let this dry overnight; then inspect it to see if any cracks or holes show. If there are any, fill them with the glazing putty. After this has dried, sand the complete piece, using a block over the places that were filled with putty. Use No. 5/0 or No. 6/0 finishing paper, sanding with the grain of the wood. Use an air duster and dust the surface clean.

The particular oil primer I have in mind reduces from 25% to 33 1/3% with V. M. & P. naphtha or gasoline, and can be force-dried at 125° to 140° F. in from five to six hours.

It might be necessary to use two coats of primer if you are working with fir wood, in order to hide the grain.

As to the next step, spray one coat of enamel, reduced 25% to 33 1/3% with V. M. & P. naphtha or gasoline, lightly over the cabinet; then follow with a full wet coat. This enamel will dry thoroughly overnight and can be packed without printing. It also can be force-dried at 125° to 140° F. for five to six hours, and will take shading lacquers for decoration purposes if desired.

I believe this is the most durable and tough 2-coat finish for kitchen furniture on the market today.

Open grained wood should be filled first with a natural filler, using 10 to 12-lbs. of paste to the gallon of naphtha. Let this dry thoroughly and proceed according to the method just described.

* * *

Another method which has been used with good results is as follows:

Take a good white lacquer enamel undercoater or primer and mix it equal parts with a lacquer sanding sealer; reduce with thinner to spraying consistency; then spray on one coat and dry this from one to two hours. Sand with No. 5/0 sandpaper and apply a second coat of the same mixture. This mixture makes it faster drying, easier sanding, and a better adhesion is obtained than when

Protective Coatings for

DEFENSE

You are among the many no doubt who have adapted their Plant to do Defense work. You may need Information on Protective Coatings to meet specific Government Specifications.

We are prepared to help you.

Day after day Hilo Defense Coatings to meet some Government Specifications are going forward to manufacturers for their specific use.

ASK US FOR WHAT YOU NEED

P. S. For Non-Defense work Hilo Black Japans and Enamels are probably your best bet for CONTINUAL AVAILABILITY, in these days when critical raw materials are being held for Defense Work only. The Hilo Blacks are described in Bulletin No. 1.

HILO VARNISH CORPORATION

BROOKLYN, N. Y.

CHICAGO, ILL. **BOSTON, MASS.**

using two coats of regular sanding sealer. Dust well and then spray either synthetic oil enamel or lacquer enamel, reduced to the correct viscosity. Dry these overnight. This finish, as can be seen, is more expensive and less durable, as far as adhesion and chipping are concerned. It is a one-day system and schedule.

Oil primers and enamels have a greater coverage of square feet per gallon than the lacquer types, which also must be taken into consideration.

It is a good idea to first spray a mist coat of enamel, as well as primer, over the entire piece and then follow with a wet coat. A fuller finish is obtained by this method.

The only way I ever got a satisfactory finish on fir plywood was to spray a coat of lacquer undercoater, let it dry thoroughly and then sand it down almost to the bare wood with a block. This coating and sanding was done to get the high spots or hard grain of the fir uniform with the soft part. Next, spray another full wet coat of this same white lacquer undercoater and let it dry from one to two hours. When dry, sand this again with a block and No. 5/0 sandpaper. This time be careful to avoid sanding through to the wood. Finish off either with a lacquer enamel or a synthetic oil enamel. These enamels can be obtained in black, white and pastel shades.

This method has been adopted where various colors are being used, with only a white undercoater or primer being applied as the first coat. Some manufacturers prefer to tint their primer to the approximate shade of their top coat of colored enamel in order to avoid mistakes by the spray men. Otherwise a spray operator might spray too many pieces of one final color. The use of tinted primer makes it easier for the finishers, since they know by the various colors of the primers what color enamels to apply.

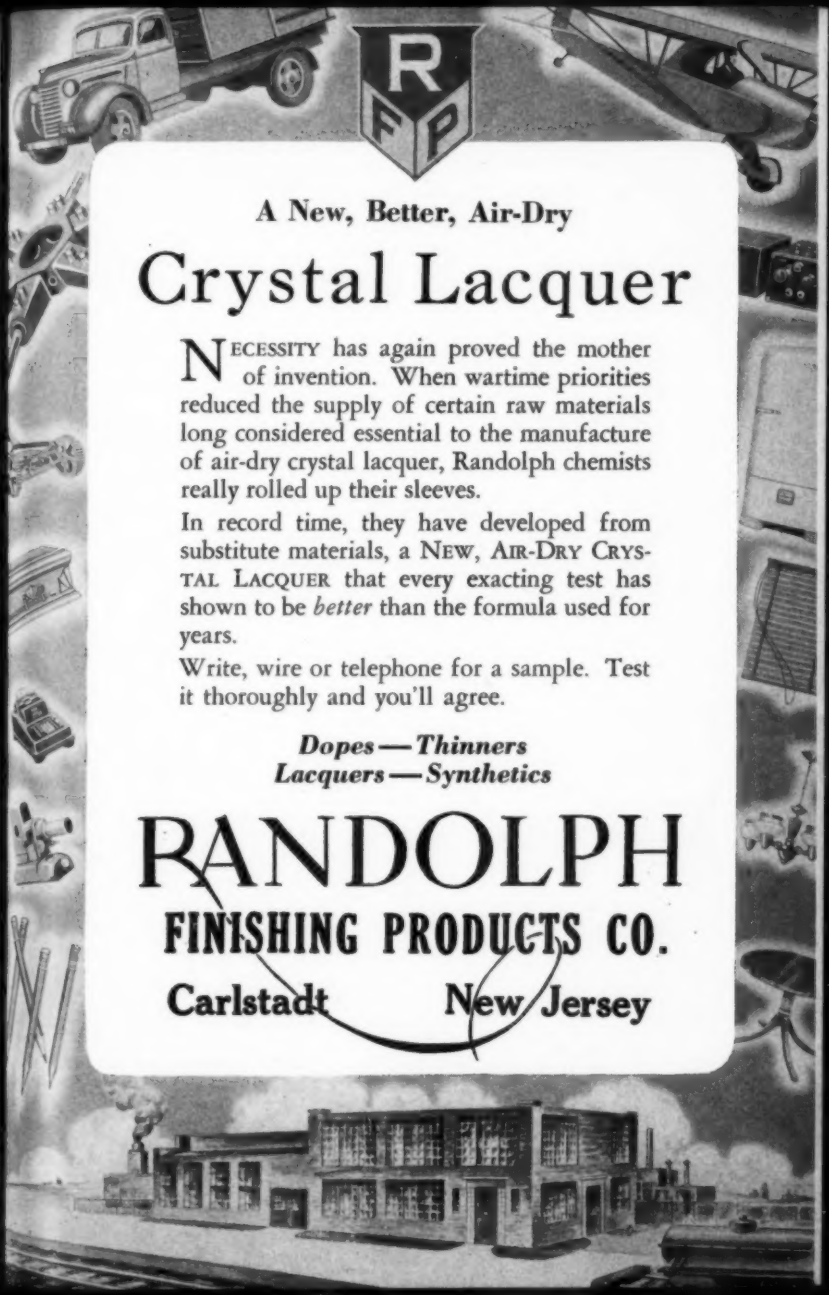
The first described system is by far the best. It is excellent for kitchen cabinets, kitchenette furniture, bathroom furniture and juvenile furniture—in fact all wood furniture wherever color is used.—HENRY NOVAK.

When finishing kitchen cabinets in white enamel, one must take into consideration the type of wood to be used. Naturally, when the surface is to be covered with a pigmented color, caution is thrown to the winds when it comes to the selection of wood.

To obtain a smooth surface, all pieces should be sanded smooth in the white. Solid wood with an open grain should be washcoated with a solution of four parts alcohol and one part shellac. Dry one hour and then sand. Fill with natural filler, 10-lbs. of filler to one gallon of naphtha. Dry overnight, or a quick-drying filler can be used, permitting the following coat to be applied in six hours. A smooth well-filled surface will be obtained in this manner. The filler should be allowed to flatten out, and not wiped wet, before being rubbed off.

Spray a coat of sealer; after the usual drying time, sand the surface and apply a coat of white lacquer undercoat. Sand and spray two coats of white enamel. If the wood is mismatched, the sealer coat can be eliminated and two coats of undercoat can be used, followed by the enamel coats.

Pieces made from close grained woods such as maple, fir, basswood, etc., can be either filled with a re-


R
F P
A New, Better, Air-Dry
Crystal Lacquer
NECESSITY has again proved the mother of invention. When wartime priorities reduced the supply of certain raw materials long considered essential to the manufacture of air-dry crystal lacquer, Randolph chemists really rolled up their sleeves.
In record time, they have developed from substitute materials, a NEW, AIR-DRY CRYSTAL LACQUER that every exacting test has shown to be *better* than the formula used for years.
Write, wire or telephone for a sample. Test it thoroughly and you'll agree.
Dopes — Thinners
Lacquers — Synthetics
RANDOLPH
FINISHING PRODUCTS CO.
Carlstadt New Jersey

duced mixture (4-lbs. of filler to one gallon of naphtha, 3-oz. of boiled linseed oil added) or a coat of oil sealer. Let dry overnight; proceed with a sealer coat; sand; apply one coat of white lacquer undercoat and one or two coats of white enamel.

Some manufacturers use a double coating of sealer followed by two coats of enamel. By this method the contour of the grain will be seen through the enamel coatings. Using filler for porous wood and the oil sealer for close-grained wood or veneer, creates a protective coating which prevents or minimizes expansion, contraction and moisture penetration. There will be much better adhesion and a longer life to the final finish.

The pigmented undercoat is a better basic coating than ordinary sealer, as it is not transparent and it hides many irregularities including the cross-cut sections of plywood. This coating hides the grain and gives a solid color after the final enamel coats have been applied.

Naturally the finisher is told to produce as cheaply as possible, but the ultimate consumer should be taken into consideration, as a smooth appearing article attracts the eye.—W. C. ANDERSON.

It is very important to get the surfaces of these woods belt-sanded perfectly smooth to a polished surface. After this has been done, apply a thin coat of good sanding sealer, cut 50% with lacquer thinner. Then apply an even coat of any color of lacquer enamel that might be desired. A good grade of lacquer enamel can be reduced to do the job with a very light coat.

The coat of sealer should be sanded very smooth. After this has once been sanded on the sealer coat, the surface will not have to be sanded again.

The cross-cut edges of plywood can be puttied with a lacquer enamel paste, made heavy enough to use under a putty knife. Let dry and sand to a smooth surface. I might add that when applying this paste, while it is still wet on the cross-cut edges, use a cloth wet with lacquer thinner and rub the paste to a perfectly smooth surface.

The procedure just outlined can be used on any soft wood surfaces, but if a wood that has open grain is being used, it will be necessary to fill the porous grain before finishing.

In looking over your inquiry, it might appear that you are using a varnish enamel over the sealer coats. In this case the building-up coats you say you are using (two coats of lacquer sanding sealer) are being used to build on a surface that has not been properly surface sanded, therefore the grain is showing. If a dozen coats were applied, to a surface not properly smoothed and prepared, the grain defects would still show.

The procedure I have given will do the job perfectly, but first comes the preparatory surface work. This will also save on the cost of finishing. Lacquer enamel jobs do not have to be applied heavy and thick to get satisfactory results.—F. W. WORTH.

Finishing Marionettes

As manufacturers of marionettes for the best retail toy outlets in the United States, we use large quantities of special flesh-color industrial lacquer, as a finish coat for our cold-process molded heads, shoes, hands, etc., and even larger

PRIORITY ORDERS

Manufacturers of products with Priority Ratings interested in quality finishing materials are assured of prompt deliveries, good service and a reliable source of supply.

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- SYNTHETICS
- VARNISHES
- ENAMELS

Write us about your finishing problems, schedule and requirements and ask for working samples.

NEW PERIOD

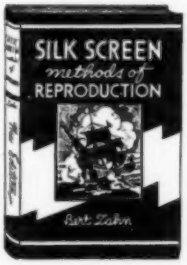
NEW YORK WOODFINISHERS' SUPPLY COMPANY, Inc.

304—8TH AVENUE NEW YORK, N. Y.

Factory—Brooklyn, N. Y.

NEW PERIOD

SILK SCREEN METHODS of REPRODUCTIONS



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THIS new book is intended for Sign Painters, Card Writers, Display Men, Furniture Manufacturers, Novelty Manufacturers, Glass Etchers and for Domestic Use.

Every detail of the silk screen process is presented clearly in detail. All equipment is fully described and its use illustrated. All materials needed in the various kinds of silk screen work are mentioned with respect to their use to advantage. Estimates of costs and prices to charge are given.

INDUSTRIAL FINISHING

1142 North Meridian Street Indianapolis, Ind.

quantities of undercoat materials.

We are not too well satisfied with our present painting methods, and feel that an improvement should be not only available to effect a saving in materials used, but to cut the number of coats applied from our present six or eight to possibly two or three, the last being our finish flesh coat, instead of the last two or three being flesh coats, as at present.

The molded parts that we paint are formed by compressing, under high pressure in molds, a mixture including a certain wood-flour mixed with silicate of soda. The newly formed parts are allowed to dry, without forced circulation, for several weeks. Then, after sanding of mold edges and inspection, they are ready for painting. When ready for paint they are rather rough and porous, hence we use several coats of lacquer sealer first.

We look forward with a great deal of interest to your reply, as you have been recommended to us as being really expert in the field of finishing.—L. L. Co.

Our product, "Polytect", which comes in flesh color besides a variety of other shades, is used for coating paper-mache and molded figures, reducing not only the number of operations, but also giving the coated object more surface strength.

Polytect can be used for smooth or textured coating. It is applied either by brush or spray gun, or it can be rubbed on by hand if used only for filling pinholes or slight imperfections. It dries quickly, especially if rubbed on; and a finish coat of clear flesh-colored lacquer can be applied as soon as Polytect is dry. As far as we can figure, without having one of your marionettes at hand, you will need only one coat of Polytect and one coat of lacquer to do the job.

Under separate cover we are sending you a small sample of Polytect, flesh color, for your requirements, and would appreciate it if you would send us one of your products or part of one, so that we can conduct our own experiments.

If you do not get the desired results with the two coats just mentioned, we suggest that you first fill the pores by rubbing unreduced Polytect into them by hand. For brushing, Polytect is reduced with a little water to honey-like consistency, while you reduce Polytect to a cream-like consistency for spraying.

The most suitable spray gun for Polytect is the type that uses top feeding, but Polytect will also work on the suction type gun.—POLYTECT, INC., NEW YORK, N. Y.

Many years ago I worked on the problem of finishing store display mannequins, with a similarly difficult porous surface. The job was done by using a water paint, "Muresco", as the first two coats of lacquer. The water paint is reasonably cheap, fills very well, sands quickly and is inert to the lacquer. It might be well to apply a first coat or two of sealer to limit contact of the water with the silicate binder.

As things are now, most of the other logical surfacers for your work are going to be hard to get, so it might pay you to try this.—DR. S. P. WILSON.

Compressed Air Trap Bulletin

A new bulletin, No. 450, by Sarco Co., Inc., 475 Fifth Ave., New York, N. Y., contains information and illustrations on various steam and compressed air traps, liquid level controls, etc. Copies are free to interested companies.

I. C. D. FORMULA NINE
NON-INFLAMMABLE « *wax free* REMOVER »

for paint, varnish, lacquer, baked enamel, cement, etc.

EASY TO APPLY—NO AFTER-CLEANING

FOR DEFENSE USE

I-C-D FORMULA 9 is safe, non-inflammable and wax free... can be brushed or sprayed... Doesn't raise grain nor discolor ...it costs less to use... saves time, labor and material... Prompt deliveries to manufacturers with **PRIORITY RATINGS.**

DEFENSE PROTECTIVE COATINGS—I-C-D Labs. have specialized in formulating and manufacturing non-inflammable protective coatings. If you have a tough defense protective coating problem send in your specifications and requirements for quick action. Write today.

INDUSTRIAL CHEMICAL DEVELOPMENT CORP.
111 MADISON AVE. NEW YORK N. Y.

Waterproof Finish for Wood Floats

We manufacture a line of automatic stock waterers in which we have always used brass or copper floats. Since brass is becoming very scarce we are looking for substitutes.

Wooden floats will serve equally as well or better than brass floats, but the wood must be coated with a finish that will prevent water absorption for at least two years. A material such as creosote is not satisfactory because it depends upon impregnation, which destroys buoyancy. The ideal material would be one that is practically nonporous, will bond to wood and metal and has a minimum penetration. The floats are partially submerged 24 hours a day every day of the year. A liquid plastic or a wax having a high melting point might be satisfactory.

Will you please refer our problem to any finish manufacturers whom you feel may have a solution for us and also give us the benefit of any suggestions your staff may have?— N. WIRE & IRON WORKS.

This problem was turned over to our Senior Chemist, Dr. A. H. Kohlhase, and he has submitted the following comments:

(1) The wooden float should first be dipped in a wood preservative such as our Sealtox to prevent any decay organisms from developing.

(2) The hardware should be attached at the top by screwing in, rather than to run a metal rod all the way through the wood sphere,

PROTECT YOUR SPRAY MEN AGAINST FUMES

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M3C CHEMICAL RESPIRATOR

Provides high safety, with 50% easier breathing, lighter weight and low cost. Wearing comfort helps sprayers maintain production schedules. Malleable metal body, patented rubber face cushion, inhalation valve, scientific absorbents. Get details.

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Graining Plate Division

184 E. MASON ST. MILWAUKEE, WIS.

box or block. The reason for this suggestion is due to the difference of expansion and contraction. By screwing in the hardware instead of running the metal rod through the sphere, the tendency to break the surface sealer would be reduced. Dr. Kohlhase's opinion is that it would be best to screw in the metal arm at the top, having it enter an undersized, drilled hole while the hole is freshly coated with a protective coating (Finite, 20%).

(3) After the float has been assembled, it should be thoroughly coated with a protective coating to prevent any moisture absorption. For this we recommend our Finite which is a thermo-plastic water-resistant and, likewise, a water-repellent material.

If there is any further information you desire concerning these recommendations, it will be our pleasure to hear from you.—GENERAL FINISHES, INC.

All the water-repellent treatments we manufacture are based on the principle of penetration and impregnation rather than coating formation. Accordingly, we do not think we have what is needed for these floats.

Our wood treatments, largely used on millwork, are designed to cause the wood to resist absorption of water brought in contact with it by rain or condensation, and to protect the wood from attacks of rot or stain-producing organisms, without changing the appearance or finishability of the surface. These treatments should not be expected to withstand continuous submersion in water for more than two weeks.

We regret that we cannot be of more service to you. We do not know of any material that we

For Defense . . Offense and Victory

THERE'S NO TIME TO LOSE—THERE'S JUST TIME TO WIN!

- INSTRUMENT BOXES
- AIRPLANES
- GUN STOCKS
- BOMB SIGHT BOXES
- TOOL CHESTS
- MARINE PARTITIONS
- RADIO INDUSTRY, ETC.
- SKIS

DONALD NELSON, the country's War Production Chief, wants "too much too soon" rather than "too little too late". American industry's answer is to get into high gear to produce the greatest amount of defense and war products in the shortest possible time.

We offer a background of more than sixty years' experience, and the production facilities of one of the finest plants in the country to those manufacturers who are faced with the problem of getting the best in production line finishes.

Listed here are some of the defense and war products that are being coated with our finishing materials.

One of our production finishing experts will be glad to call at any time that suits your convenience.

THE LAWRENCE-McFADDEN CO.

Headquarters for Fine Finishes Since 1875

7430 STATE RD. PHILADELPHIA, PA.

could recommend for your purpose.—PROTECTION PRODUCTS MFG. Co.

We regret that at the present time we are unable to furnish materials which will meet this requirement because of existing priorities. Should this situation become alleviated, we will be glad to bear your application in mind and supply you with samples of our product.—Central Process Corp.

We suggest that you immerse the blocks in Bruce floor finish for three minutes. Then take them out and allow them to dry. If this does not prevent the moisture from getting into the blocks, we suggest that you follow this with one or two coats of what we call our Bruce gymnasium finish, which is a good Bakelite-base varnish, made in such a consistency for gymnasium floors.

We originally intended Bruce floor finish to be primarily a scratch-proof penetrating finish for hardwood floors, but in recent years it has gotten into other fields, such as being used for grain-setting on plywood; interior trim finishing, and even for finishing furniture.—E. L. BRUCE Co.

The Lea Method of Burring

A new bulletin being distributed by The Lea Mfg. Co., Waterbury, Conn., describes methods, supplies and equipment for removing or smoothing out objectionable rough or sharp edges of intricately machined metal parts that are manufactured to close tolerances. Lea compound of several grades are used on various types of buffing wheels, brushes, etc., to do this burring quickly and economically.

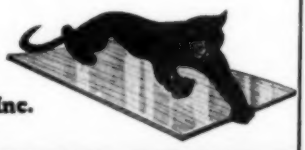
Lea compound is a patented buffing composition of a greaseless nature. It is made up in the form of round bars 2-in. in diameter and 10-in. long, each of which is hermetically sealed in metal foil.

Consider these facts about **KILNVAR**

. . . . The varnish-type finish for forced or air drying

Production tests on KILNVAR everywhere, prove it to be a finish of rich, enduring beauty. It rubs to a clear, transparent film, resists hard knocks—is unexcelled for fine cabinet wood finishing. It is offered in Gloss Rubbing, Semi-Gloss and Flat effects. BAKESEAL . . for undercoat . . seals quickly—gives a tough, solid foundation for enduring finish. Both these materials are designed for conditioned drying or air drying.

Arrange for a production test direct or through the Schaefer representative who calls on you!



THE SCHAEFER VARNISH CO., Inc.
Louisville, Kentucky

Letters from I. F. Readers

(Continued from page 8)

and the stenciling process. Will you please furnish us with the address of the company who furnishes the wire screens and equipment? The article to which we refer starts on page 42 of INDUSTRIAL FINISHING Magazine.—K. S. Co. (Designers & Mfrs. of Store Equipment).

We are submitting names of manufacturers of screen-stencil equipment, including the company that Mr. Hiett represents.—ED.

Camouflage Designer-Painter Offers Services

At the suggestion of . . . I am writing to inquire if you could furnish me with any information as to where I might apply for a position in camouflage, research, design or application.

I hesitate to trouble you with this matter, but I am finding it difficult to obtain any knowledge as to who is doing this kind of work. I have made application for civilian employment to the army and the navy in this field without receiving any encouragment. However, I believe I have a number of the natural and educational qualifications which would be required and I am anxious to put them to use in our national effort.

I am 36 years of age, American, married, a university graduate, have been painting professionally, possess unusually good vision and visual memory, and I have studied what little I have been able to obtain on the subject of camouflage.

I should like any work in camouflage which would make use of a landscape painter's ability and experience. I am not as interested in the pay involved as in finding a place for my talents in the War program. I will be glad to furnish any kind of references.—F. K. W.

P. S. Write INDUSTRIAL FINISHING Magazine for my name and address.

Want Thur-Ma-Lox

We are interested in receiving further information regarding No. 7 Black Thur-Ma-Lox. We do not seem to see any mention in your article in the January 1942 issue of INDUSTRIAL FINISHING, pages 96 and 97, as to the name of the manufacturer. We have read this article and would appreciate

your advising us the name of the manufacturer so that we can write for a sample. At the same time we would like to know if this material would stand up in a chromic acid bath.—M. S. Co. (Mfrs. of Shears).

It is the W. M. Kellogg Co., Refractories Division, 225 Broadway, New York, N. Y.—Ed.

Wood Grained Paper

Would you be in a position to advise us of a manufacturer or printer of paper with a wood-grained finish on same, to be used on coffee and cocktail tables under a glass?—A. F. A. (Furniture).

We have submitted two or three names of companies which we think can supply what is wanted, but we are not sure. Will some reader tell us something authentic on this?—Ed.

Can Supply Coatings Wanted

Two items in your last issue (Feb.) caught my eye as being probably concerns that need our materials. Will you kindly give me the names and addresses of the concerns, namely, C. L. S. asking for "Rust-Proof Coating" (page 4) and B. C. Co. (page 7) asking for a source of "Aluminum Paint"? We can meet each requirement I am sure.—J. E. B. (Distributor).

Information supplied.—Ed.

Magic Tack Rags

Will you please advise us where we can purchase Magic Tack Rags? Some time ago you carried advertisements of this product.—B. Mfg. Co. (Plastic Coated Wall Sheets).

It's W. A. Juergens Co., 4036 La-Grange Ave., Toledo, Ohio.—Ed.

Fluorescent Paint

We have a customer who is interested in securing some fluorescent paint—Government specifications 14102 Color 1.

We are not in a position to quote them on such a material. If you can suggest a possible source of supply, we feel sure it will be of real benefit to our customer.

We note, in your October 1939 issue of INDUSTRIAL FINISHING, an article on

FINISHING ROOM FOREMEN

. . turn out better work faster with SEA-LAC . . . every shipment is ***pre-tested*** for assured satisfaction . . . every Finish is designed for streamlined production.

Primers • Sealers • Lacquers
Baking Synthetics

Tell us your finishing schedule and requirements for samples and full information about the ***best*** SEA-LAC Finish for ***your*** job.

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SUPER-KAMEX Sensational FINISH

The New Finish that combines best features of Lacquer and Varnish

Cabinet and furniture finishers find Super-Kamex is just what they have always wanted—a new and improved finish with the **best features** of varnish and lacquer without the faults of either. Has twice the solid content of lacquer and dries as quickly. Can be sanded or polished within an hour. Waterproof, alcohol and alkali resistant. Best results with spray but brushes well if thinned with 5% to 10% turpentine. Non-lifting—can be applied to any surface. One coat of SUPER-KAMEX equivalent to two of clear patented lacquer. An ideal product for furniture finishing and refinishing. Comes in clear gloss, semi-gloss and flat. FREE—Send today for liberal SAMPLE and visual proof panel which shows comparative results. Also ask about Dry Stains, Stick Shellac, Shellac Enamel. Full information.

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"VICTORY" FINISHES

Army-Navy Aeronautical Specification Nitrate Cellulose Lacquers, Dopes, Thinners and Primers

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Quartermaster Corps Olive Drab Synthetic Enamels

●

Type I or II Black Acid-Proof Ammunition Paint

●

Wrinkle Finishes

●

WE HAVE THEM

Write or call us when in need of government specification material.

Industrial Division

SPEED-O-LAQ PRODUCTS COMPANY

ST. PAUL, MINNESOTA

such paints. In this article you use some photographs, courtesy of Continental Lithograph Corp., Division of Luminescence. If this company, or any other one on your list, might be in a position to furnish such a material, we will greatly appreciate your forwarding their name and address to our customer. . . . —P. & L.

We are sending your customer the names and addresses of companies who have the material you ask for.—Ed.

Reclaiming Solvents

Can you give us the names and addresses of concerns making small stills for reclaiming solvents and lacquer thinners? We will appreciate this information if you have it available.—C. Paint Co.

This is important to more and more concerns. Our reference cards include names of the following manufacturers or companies that sell solvent-reclaiming equipment: Butler Mfg. Co., Kansas City, Mo.; Carbide & Carbon Chemical Corp., New York, N. Y.; Loeb Equipment Supply Co., Chicago, Ill.; Phillips Mfg. Co., Chicago, Ill.

Can some reader suggest others? We are eager to obtain additional information on this subject.—Ed.

Dustrid Mask

Referring to the article on Dustrid Mask, on page 29 of the February issue of your paper, will you please have the manufacturer of this mask send us a sample, together with literature and cost?—W. Mfg. Co. (Store Fixtures).

Request granted.—Ed.

Sprayed "Plated" Finish

We would appreciate some information on a sprayed finish that will take the place of a plated finish. Any information, such as names of various companies whom you think might be able to help us in this instance, will be greatly appreciated.— A. H. Co. (Chrome Dinettes).

We have had several requests for a finish that can be sprayed on and which later looks as though it had been plated. These have been referred to a manufacturer whose product, we understand, serves this purpose satisfactorily.

Our published letters on this subject have also brought a letter from

W. B. Jarvis Co. (Ornamental Hardware and Accessories) Grand Rapids, Mich., in which this company states that they have a modern paint room and have produced thousands of various finishes which replace plated finishes quite satisfactorily. In fact, they sent us samples of automobile hardware which have a marvelous appearance. One appears to be chromium plating and the other appears to be gold plating, but both are made of die-cast zinc, the surfaces of which have been buffed and coated with synthetic enamels. We do not know what company's finishing materials they are using.—Ed.

Plain Burn-in Knives

We are interested in learning where we can purchase burning-in knives—plain knives that can be heated in knife heaters.

We have heard of someone making these of saw steel, making thicker blade knives that hold heat longer.—O. E. Co.

Whose Corner Desk?

On page 18 of February Industrial Finishing, there is a photo of a corner desk. Will you please advise from whom this desk can be purchased?—B. R.

According to the American Furniture Mart, this desk is a product of the American Woodcarving Co., Chicago, Ill.—Ed.

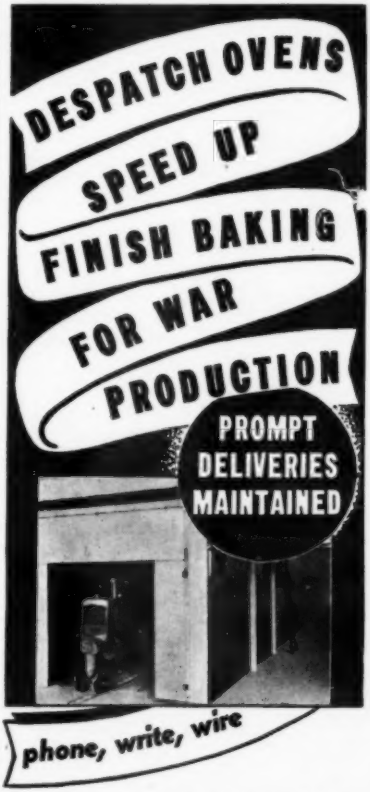
Whose Material Was Referred to?

We would appreciate your furnishing us with the name of the organization that manufactures the varnish mentioned in the article, "Lacquer & Synthetic Finishes," by F. R. Boynton in your September 1941 issue.—T. S. Co.

Mr. Boynton tells us that the material he tested and used is a product of Reliance Varnish Co., Louisville, Ky.—Ed.

Transparent Coating for Documents

Last November you were good enough to give me some valuable information. I take this opportunity to ask you if you know the names and addresses of manufacturers of a quick-



War production demands must receive first attention and fast delivery of finish baking ovens. Despatch has spent 41 years developing, improving, expanding production and service. Now, our background enables us to fill the huge requirements of finish baking ovens for war production. Advise us of your needs by WIRE, PHONE or LETTER. Despatch has a wide range of standard ovens available for prompt delivery. Special units may be quoted and built with great speed.

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KEYSTONE

industrial and maintenance paints, varnishes, enamels

ARE THE RESULT OF 114 YEARS OF MANUFACTURING EXPERIENCE!

TELL US
YOUR PROBLEMS
for
NATIONAL DEFENSE

KEYSTONE VARNISH COMPANY
BROOKLYN, N. Y.

Boston, Mass. Chicago, Ill.

drying transparent protective coating for blueprints, maps, photostatic copies and other documents. The coating has to be fairly waterproof, non-cracking with good adhesion and hard surface.—Z. Laboratories.

Information supplied.—Ed.

Who Knows? We Don't

Kindly advise whether you can refer us to any concerns that can do iridescent coloring on acetate sheets.—C. C.

Will some reader please write us this information immediately, so we can advise C. C. —Ed.

Tung Oil Article

We understand that in one of your recent issues there appeared an article entitled, "Tung Oil Trees in the U. S." If this is the case, we would appreciate very much your telling us how to go about securing some copies of the article in question.— B. & C. (Importers, Exporters).

The article appeared in our December 1941 issue, copy of which is being sent to you. For further information, write Reasor Tung Plantations, Inc., 135 S. LaSalle St., Field Bldg., Chicago, Ill.—Ed.

One-Coat Air-Dry Finish for Metal

We are particularly interested in a one-coat, air-dry spray finish, in color, to go directly on steel tubing.—G. R. Co. (Tubular Metal Specialties).

"Woodlife" Wanted

We are looking for information on a material called "Woodlife" which we understand is used in treating wood turnings. Certain government contracts specify that turnings covered by them be treated with this material or one equal to it. Any or all information you have covering this material will be greatly appreciated at your earliest convenience.—X. Y. Co.

This material is a product of Protection Products Mfg. Co., Kalamazoo, Mich. In a letter we are submitting names of other manufacturers of similar products (deeply penetrating sealers for wood surfaces).—Ed.

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Editorial

Inquiries Reveal Trends of What's in Demand Now

Inquiries coming across the Editor's desk reveal certain definite trends as to what things in this industry are particularly in demand among a wide variety of manufacturers at the present time —and it is more than probable that these same goods will continue to be in demand in the future. Fortunately, most of the materials are available.

Luminous Paints: Many concerns, including paint manufacturers, have asked for sources of supply for luminous paints, that is paints that will glow in darkness after having been activated by exposure to sunlight, daylight or artificial light for some time. These paints are in demand to make markings that will show in blackout darkness. Much experimenting and development work have been done along this line and, as a result, more companies are now in position to offer luminous paints. As in other types of paints, there is more or less variation in the quality of different brands of luminous paints. Some will retain their luminescence longer than others. Some will glow brighter than others; and, of course, there are different colors. We are not in position to state with accuracy which concern's materials are best, but we can name several companies that do have luminous paints to sell. Incidentally, whoever uses any luminous paint will probably use it sparingly because it is very expensive. Some of it is priced to sell at $40 to $50 per gallon.

Wood preservatives, which include penetrating sealers plus moisture-proof if not waterproof coatings, are very much in demand, especially since wood is being used as an alternate for metals that are now scarce and in some cases not available at all for certain civilian uses. Several different materials are on the market and they have real merit. They are serving important functions in many industries.

Rustproof coatings are now more widely in demand to save iron and steel parts and products from being slowly wasted away and eventually consumed by the rust-

ing process. Ordinary paint coatings allow rust, once started, to continue under the paint film. Special rust compounds, however, penetrate the rusty surface, unite with the rust and prevent the process of rusting from continuing to eat away the metal. Treatment with a rust preventative compound serves as an excellent prime coat for a variety of protective and decorative coatings. Some rustproof compounds are clear, while others are colored with pigments. Several excellent brands of this material are now on the market.

Other materials on the inquiry list include finishes that look like metal plating, transparent coatings for printed paper surfaces, protective coatings and marking paint for canvas, sealers and protective coatings for papier-mache surfaces, etc.

Highlights of Los Angeles Furniture Show

* "Better than expected" was the remark heard everywhere during the Los Angeles Furniture Market. But in many ways the market was spotty and erratic with no well defined buying trends and there were the greatest variations in business reports.

It was predominantly an upholstered and occasional piece market. A few buyers seemed to be hunting promotional items for a quick turnover, but this was sporadic and not typical of the entire market, as much of the buying was in the quality brackets, with price having little consideration.

Despite the many contradictions, one thing held true throughout the entire market. New styles were greeted with enthusiasm and orders; and much of the success of the Los Angeles market can be attributed to the many new styles that were shown.

Modern stole the show. Never before has there been so much modern, nor such a variety in the styling, for it ranged from the simplest functional styles to carved provincial modern, baroque modern and Chinese modern.

Finishes were less blond than formerly. Natural toast tones predominated, though a few bleached finishes were seen. There was some experimentation with deep stains such as teak, Chinese red and emerald green in Chinese modern.

Philippine was less evident, though some manufacturers with large stocks showed it, but birch, ash, oak, maple and even a patented, textured plywood showed signs of replacing it.

Many ingenious solutions to the pull problem were shown. Often slots were routed out of the drawer fronts. One bedroom group had a block front with a ½-in. round set at the edge of the block forming vertical pulls. A provincial modern ensemble of limed ash had a strip of carving across the drawer fronts and portions of the carving were cut a little deeper to afford a finger hold and serve as a pull.

The functional modern without pulls, which began to replace waterfall a year ago, was seen more often, but almost always in a less austere form and with decorative notes such as narrow bands of classic fluting, swell fronts and carved tenite pulls.

Early California styles contrib-

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* Guest Editorial . . . Many readers can write an excellent editorial — two or three paragraphs that present a timely suggestion or valuable idea which will stimulate real thought on a live subject. The Editor welcomes guest editorials and pays for those that are published.

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uted almost as much news to the market as modern did. Like modern, Early California styles showed more variety this year than they have before.

Decorations in Early California were more subdued and sometimes reflected a Pennsylvania Dutch influence. The lines of Early California were simpler, often with modern or Early American contours.

Following the trend to more restrained decorations one manufacturer used the entire design on one piece only, such as the coffee table, and repeated single motifs of the design on the other pieces.

Covers in Early California showed more variety, too. The trend to light, small figured taps continued in living room ensembles, while in rumpus room groups the covers were gayer than ever. Most striking in the latter was a bold gray, black, white and scarlet plaid, a game set covered in a realistic leopard skin like fabric and an impressive hand blocked print of sombreros in russet tones and orange.

This choice of gayer colors was not limited to Early California alone. All the manufacturers of living room pieces said their orders showed a marked swing to lighter and brighter colors. In addition there was a far more liberal use of colors once considered taboo in certain price brackets. Leaf greens, yellows and grays, formerly high style colors were shown in moderate price brackets.

A few upholstering houses also brought out experimental pieces anticipating an eventual shortage of springs and webbing. In the lower brackets slats were substituted for webbing and single unit tight seats were shown. One of the most interesting experiments was a modified Victorian suite with a staple cotton attached cushion and a channel back.

Lamps, naturally, more than any other classification reflected shortages. Wood-onyx, pottery and glass replaced metal bases and composition bases, remarkable for their heaviness, made an appearance.

Developing and Using Alternate Finishing Materials

★ It has been observed that the difficulties the finishing industry faces today are not generally appreciated or, for that matter, even thought to exist except by those

more or less directly connected with it. Perhaps there is good reason for this in that problems of the finishing industry are not of as direct popular interest as those of some other industries. Nevertheless, the problems are here and they are real ones.

Take, for example, the ingredients used in finishing materials—resins, solvents, oils, pigments, dyes, etc. For many complicated reasons, securing them can be exceedingly difficult. As is well known, some solvents are used in the production of explosives, toluene being a notable example. If appreciable quantities of toluene are used in the manufacture of explosives, it is obvious that toluene will not be available for use in finishing materials, and the finishing industry is thereby affected. Perhaps a not so well known fact is that many plants originally designed to produce certain synthetic resins can be switched over without too much difficulty to make related chemicals of more use in our war program. Examples like these may be listed almost without end.

How can the finishing industry supply our war needs for finishes to be used on tanks, guns, cantonments, etc., as well as supply civilian finish needs for maintaining homes, equipment, etc. against deterioration? The answer lies in the fact that it is usually possible to produce more than one kind of finishing material to do any one job. If a lacquer raw material is unavailble, then an air-drying synthetic enamel which does not require that particular ingredient may be made. If a solvent becomes scarce, a change in formulation may be made to allow employing another solvent that can be obtained.

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have been accused of trying anything and everything for possible use in finishing materials. Most of them will admit this. We can be thankful that they have. We can be sure that they know most of the usable ingredients and that they will not be at a loss to produce some finishing material to do the job.—G. R. B.

Let's Be More Saving with Materials We Can Get

* Due to the acute shortage of raw materials used in the manufacture of finishing materials, we will only be able to obtain limited quantities of many of these materials. This makes it necessary for us to conserve what materials we are able to procure, so as to make them cover our production needs. We can accomplish a great deal by eliminating, as far as possible, all waste in handling and using our finishing materials. Wherever possible we must substitute materials that are easier to obtain, instead of insisting upon using materials that are scarce and hard to get.

Be sure that all containers, such as pressure tanks, etc., are kept clean and free from dust and dirt. Covers should be kept on all containers when they have finishing material in them. Barrel bungs should be kept closed tight to prevent dirt and evaporation from rendering the contents of the barrel unusable.

In mixing stains, fillers, etc., be sure to mix only what will be needed at the present time, so that it will not be necessary to throw the unused portion away.

A lot of materials can be saved by using the proper air pressure and the proper spray gun tips, needles and air caps for the type and viscosity of material that is being sprayed.

As to substitutions for certain materials, of which we will not be able to secure enough for our present production needs, it will be necessary to use alternate materials that are easier to obtain for certain operations. For example, in finishing the interiors of drawers, where we have been using lacquer sealers and lacquers, perhaps we can substitute an oil-base drawer coater instead and thus keep our lacquers and sealers for the exteriors of the cases.

This is also true of the interiors of buffets, cabinets, china cabinets and wardrobes. Where we have been using lacquer for a finishing coat we can use, instead, a coat of

flat varnish which, at present, is much easier to obtain than lacquer.

As we are probably in for a long, drawn out war, many of our sources of supplies for finishing materials will become less and it will be extremely difficult for us to get enough materials to keep our factories running. I think it is up to foreman finishers to make the available materials go as far as possible. This we must do if we expect our factories to operate during the coming year.—H. W. CHESTER.

Today's Shortages; Tomorrow's Dividends

* Today's shortages, insofar as the finishing industry is concerned, are most strongly felt by those who are using the developments of the last 12 years, and particularly the developments of the last five years. The users of high-bake urea enamels, mar-proof lacquers, infra-red baking finishes, fast-baking furniture finishes and other materials based upon synthetic resins may feel that they are being subjected to a particularly serious shortage that has no redeeming features. These shortages do mean a reduction in the quality of the finish, lower production and possibly higher costs, but no one will go out of business on account of finish shortage. There are many old standby finishes available.

Some of the shortages are due to restricted use of chemicals for resin production, but the main cause for shortages is the great consumption of all modern synthetic resins by government agencies and contractors to government agencies.

The reason that today's shortages will pay dividends tomorrow is that the widespread use of the newest synthetics on government contracts will provide a good market for these synthetics, enabling the manufacturers to produce efficiently, amortize equipment and work out production kinks. We will show specific instances where government agencies have accelerated the technology and large scale production of specific synthetics.

The finishing industry has shown none too great interest in the use of esters of cellulose other than the nitro-ester. The Naval Aircraft Factory of the U. S. Navy incorporated ethyl-cellulose in one of its specifications and cellulose-acete-butyrate in another. The resultant lacquers are outstanding, having excellent weathering characteristics. Though expensive, they are none too expensive for the uses to which they are put. This pioneer work by a government agency establishes a market for these new synthetics and at the same time almost makes it mandatory that chemists for specification finish manufacturers become acquainted with their properties. After the war these synthetics will be available in large quantities at comparatively low cost, and our chemists will know a lot about using them.

Vinylite resins have been available for at least eight years, but the consumption in the coating industry has been small, in spite of the excellent characteristics of these resins. Their high cost was partly due to limited production. Now vinylite can be obtained on priority only, being used on some vital defense production. Outsiders do not know what the production now is, but it is known that the entire production is being taken.

Synthetics from acrylic acid have made some headway in the coating industry, but their use is now cur-

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tailed due to the great quantities of acryloid and lucite being used in defense work, particularly for bomber noses. You have all seen pictures of these noses being manufactured at the Rohm & Haas plant at Bristol, Pa. The impetus which this activity is giving to the production of acrylic resins will certainly mean greater availability and lower prices in the future.

We firmly believe, as stated previously, that there will be a large productive capacity for all kinds of synthetic resins after the war. These resins will be available at much lower cost than at present. This situation will be a stabilizing influence against a depression in a number of industries. If synthetics are cheaper, the use of infra-red will be expanded (to some big-volume industries) and a market will be provided for surplus electrical power. Production of large quantities of synthetic resins will greatly support the basic chemical industry. The need for richer solvents for synthetics will bolster up the solvent industry and it, in turn, will consume larger quantities of basic chemicals.—HARRY DANIELS.

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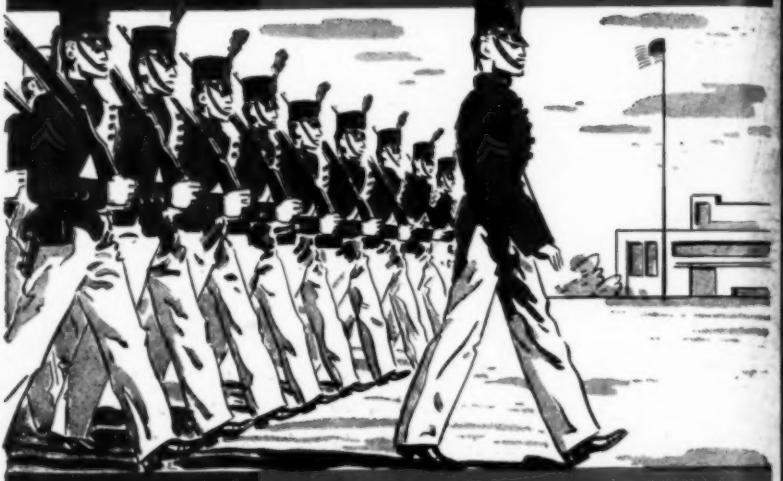

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